

Carrier

50BJ,BK

Cooling Capacities:
161,000 to 866,000 Btuh

Modu-Vac Indoor Packaged Cooling— Variable Air Volume System



breathes new life into your
building as interior layouts
change

Carrier

Carrier's new Modu-Vac is the ideal cooling and air distribution system for your variable volume, constant temperature applications.

The single-package, vertical 50BJ or 50BK (condenserless) cooling unit automatically conditions the air to your exact requirements; then Modubox and Moduline®, Carrier's unique variable air volume terminals, distribute the air in precisely controlled flows to each area of the building.

50BJ,BK units plus Modubox and Moduline together they form Modu-Vac, the modern air conditioning system that allows your building to change with the times, whenever interior layouts are updated or modified.

Whether you choose the 50BJ water-cooled unit or 50BK condenserless model, you'll get a package that can cool, dehumidify, and circulate air — all under a microprocessor master control that assures minimum energy consumption at full and partial load.

The 40 to 60 ton units are designed to match up with 39E Series size 32/36 accessories. This permits selection of either high or low

velocity filter sections, bag filters, mixing boxes, or preheat coils. Air filters for base units must be field supplied.

Carrier's Modu-Vac serves any building... schools, offices, libraries, high rises... new construction or renovation. Just set the packaged cooling unit in the equipment room or conditioned space, attach the ductwork and install the self-contained Moduline and Modubox VAV terminals. Modubox and Moduline variable air volume terminals provide flow from 15 thru 3000 cfm. With Moduline, a single thermostat and volume regulator located in one of the air terminals can be used to control the variable supply air quantity either individually or in a series of air terminals... to your specifications. With Modubox, the single thermostat and volume control box can service large zones with up to 3000 cfm of precisely conditioned air. When interior partitions change, you'll see how adaptable Modu-Vac, the VAV system, really is. Changes will always be minimal.

Get all the performance you expect from a built-up system without the extra cost of designing and installing one. Modu-Vac does it all.

Save design time — Carrier's Modu-Vac blends the simplicity of vertical, single-package air conditioners with Modubox and Moduline's unparalleled terminal flexibility so that you can reduce your design time considerably. With the 50BJ,BK/Moduline/Modubox combination, there's no need to use valuable time selecting the various components of a split system. Just select the appropriately sized 50BJ,BK indoor unit. You know the components are compatible; you know they've been thoroughly tested... there's no guesswork. And when you see how smoothly installation goes, you know you've made the right move.

Installation is easy — A trouble-free installation saves money from start to finish. And Carrier's Modu-Vac offers easy installation from the indoor unit right out to the farthest air terminal.

The 50BJ,BK cooling unit in its rugged compact package can be placed in a variety of locations, whether in the equipment room or the conditioned space. Each of the 7 sizes can be installed with either vertical or horizontal air discharge. The factory-installed piping and the prewired electrical center simplify field connections.

Moduline terminals and Modubox boot-diffusers are, of course, designed to match perfectly a wide range of custom ceilings... without custom alteration and fit-up. And Moduline and Modubox System-Powered units install without wiring, water piping, extra insulation or, in most cases, return ductwork. Add to this the unique self-balancing and self-regulating capability of these units and you'll find that the Modu-Vac system is a truly economical installation.

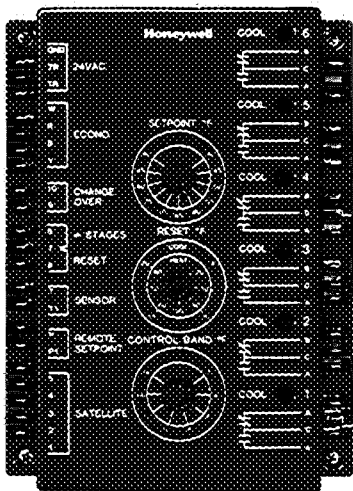
Look for minimum maintenance and service — The Modu-Vac system is designed to provide years of trouble-free service with low maintenance.

All components of the 50BJ,BK indoor unit are mounted on a sturdy steel frame encased in a Weather Armor cabinet of heavy-gage, galvanized steel. This rugged construction provides strength and durability and affords excellent protection against damaging dirt or moisture.

Easy-to-remove panels provide complete access to internal components and controls. The time-tested serviceable hermetic compressors are sealed against dirt and moisture contamination. Their precision parts have minimum-wear surfaces that are thoroughly protected by positive pressure lubrication.

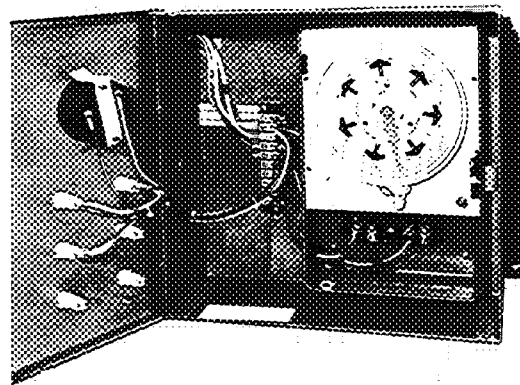
The rest of the Modu-Vac system is equally maintenance free. Moduline and Modubox System-Powered terminals have no motor-driven dampers or remote pneumatic controllers. Their self-contained controls balance and maintain the required airflow automatically year after year.

Count on low operating costs and high-capacity performance — The 50BJ,BK Modu-Vac units contain an advanced solid-state microprocessor system that assures maximum operating economy. This computer brain constantly monitors unit discharge air temperature and compares it with conditioned space temperatures. Logic circuits then sequence unit start, stop and cooling stages to provide just the amount of mechanical cooling necessary for stable, comfortable conditioned space temperatures.



MODU-VAC MICROPROCESSOR

The microprocessor control provides more precise control over the leaving air temperature by narrowing the throttling range around the set point. This is the most important ingredient in true energy saving systems. Using this microprocessor, a truly integrated field supplied economizer is possible.



TIMER CONTROL PANEL W/7-DAY PROGRAMMABLE CLOCK

Modu-Vac saves energy with its accessory 7-day programmable clock. Set it to shut down the system during building unoccupied periods and this 24-hour-a-day energy manager will save energy (and dollars) for you all thru the week.

One further feature; the clock contains a 10-hour spring carryover to maintain operation during power failure. No program readjustment is necessary.

- **Dual Carrier Serviceable Compressors (50BJ, BK024-064 only)** deliver quiet, reliable high cooling capacities at low cost. The Time Guard® circuit, a Carrier exclusive, eliminates short cycling and simultaneous start-up of compressors if any of the safety devices open. This feature minimizes power surges.

- **Automatic Capacity Control** at partial load is provided by electric unloaders and compressor cycling that tailor cooling capacity to cooling requirements. A temperature-actuated microprocessor cycles the electric unloaders and compressors to ensure positive control of the supply air temperature as it leaves the unit. The result is lower operating cost.

- **Positive Compressor Protection** is assured on all units by the use of calibrated, single-phase protection circuit breakers, high- and low-pressure switches and internal protection (units 016-034) or discharge gas thermostat (units 044-064).

- **Crankcase Heaters** (50BJ044-064 and 50BK016-064) are energized during the compressor off-cycle to reduce dilution of oil by refrigerant.

- **High-Efficiency Condensers** provide maximum exposed heat-exchange surface for greater heat rejection with less water consumption.

- **Hot Gas Bypass** reduces evaporator coil freeze-up at very low loads. Hot gas bypass refrigerant control assures reliable cooling operation on those rare occasions when the load drops to extremely low levels. During those low load periods, when the system is experiencing minimum airflows, the hot gas bypass valve allows space condition to remain comfortable.

- **Pre-wired electrical control center** contains all control devices. Terminal block provides for a single-point field power connection.

- **Intertwined Evaporator Coil** for better cooling and dehumidification at part load. Modu-Vac system refrigerant circuiting features an evaporator coil with intertwined design. This allows each refrigerant circuit to chill the entire coil face and depth. If one circuit shuts down for part load operation, the full finned surface of the coil still remains cool, providing controlled space conditions even at light load.

- **Forward Curved Fans** move large volumes of indoor air quietly and at a lower rpm than most comparable fans. The compact housing gives the fans superior capability for vertical or horizontal supply air discharge.

- **Outdoor Fan Relay** is shipped with 50BK016,024,044-064 units and is factory installed on 50BK044-064 units.

Factory installed options (FIOPS)

The following FIOP's are available for use on 50BJ,BK 044-064 units:

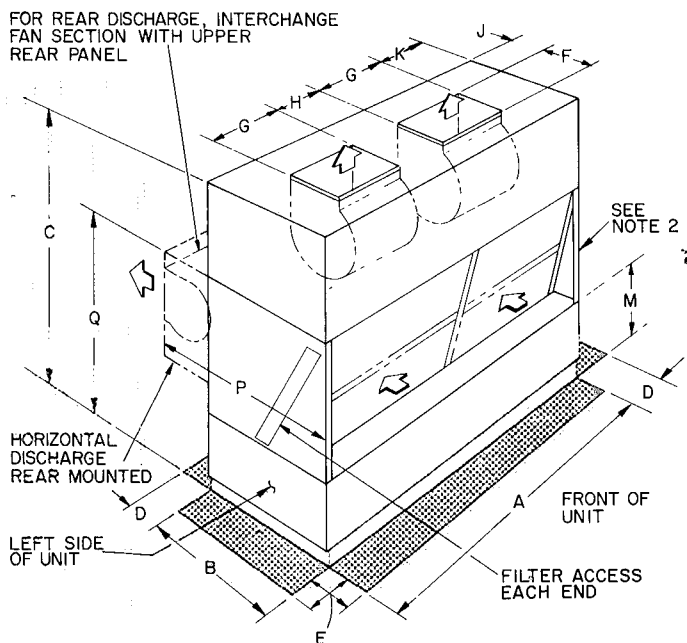
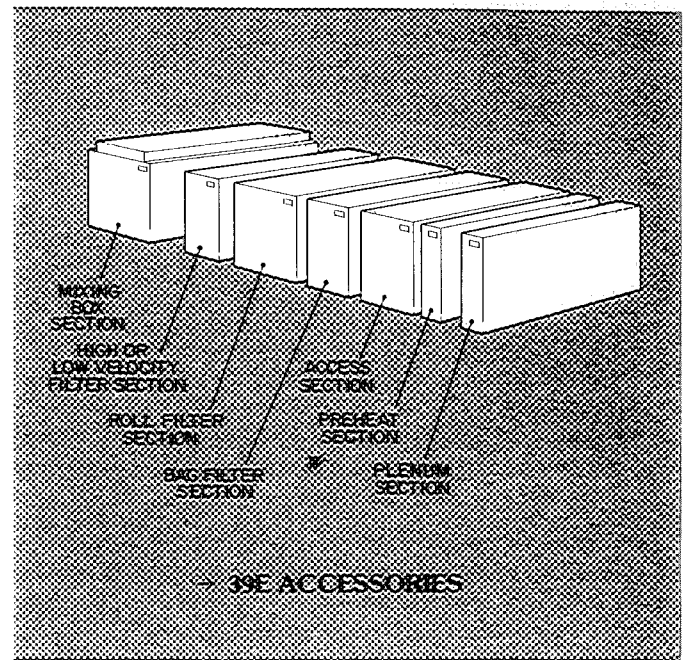
- alternate horizontal fan position for horizontal discharge.
- alternate top discharge for upblast rear discharge.
- alternate motor and drive packages.

• **Timer Control Panel** includes a 7-day programmable clock with a 10-hour spring carryover function and skip-a-day operation, 3 status lights for monitoring system modes and a 5-hour bypass timer for placing unit temporarily in occupied mode during otherwise unoccupied times. This panel can be mounted on the side of each 016-034 unit or can be remote mounted (016-064) with one timer control panel operating multiple units.

• **Return-Air Inlet Grille (50BJ,BK016 and 024)** adds an attractive touch to the front of the base unit when duct-work is not used. Hinged grille covers the filter opening with a decorative, easily attached, expanded metal panel.

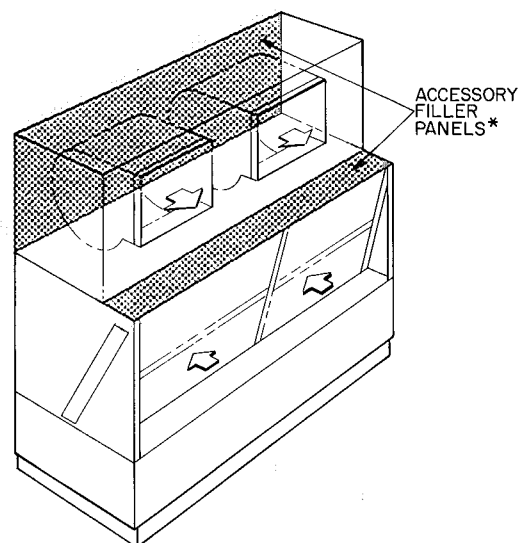
• **Winter Start-Up Package (50BK044-064)** provides a 3 minute time delay by shorting out the low-pressure switch on each compressor. This enables each compressor to start even during low ambient conditions.

• **Accessory Flexibility** — All 50BJ,BK044-064 units are directly compatible with 39E (size 32/36) accessories. Refer to latest 39E Series literature for air filter, pre-heating coil and mixing box information. The 40-60 ton units are also compatible with 39E (Size 15) discharge dampers. Two dampers are required per unit

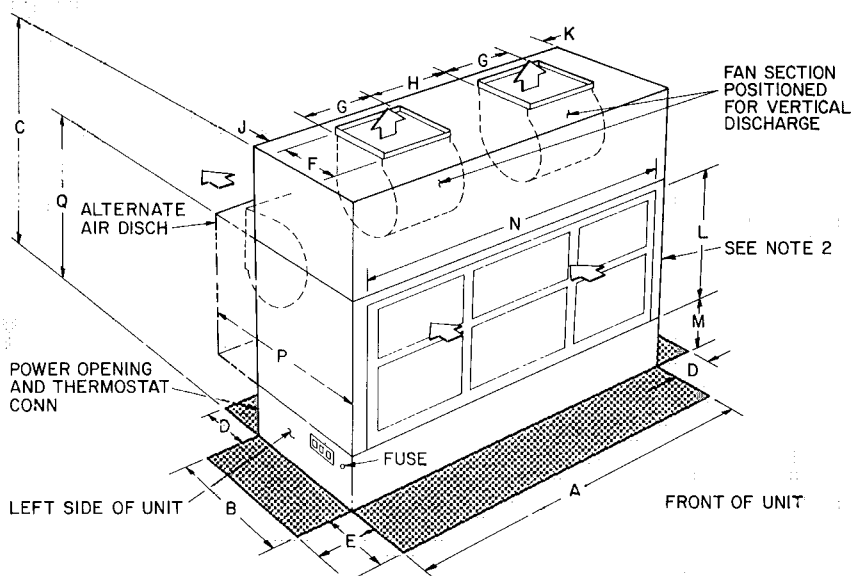


UNITS 50BJ,BK016 AND 024

OPTIONAL TOP HORIZONTAL DISCHARGE



*For optional top-mounted horizontal discharge, use accessory filler panel package as shown. See installation instructions.



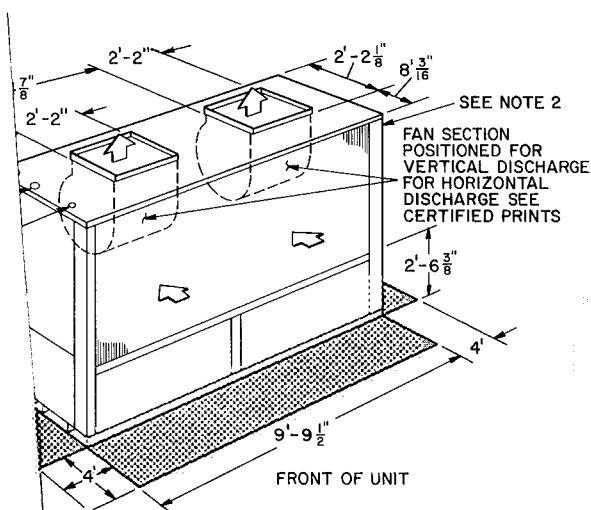
UNITS 50BJ, BK028 AND 034

→ DIMENSIONS (ft.-in.)

UNIT 50BJ, BK	016	024	028	034
A	6-8		7- 9¼	
B	2-4		2-11¼	
C	6-10½		8- 0⅞	
D	2-0		2-0	
E	3-0		3-0	
F	1- 3¾		1- 8⅞	
G	1- 2⅝		1- 8⅞	
H	1- 4¼		1- 7⅞	
J	0- 1⅞		0- 2⅞	
K	2-0		1-4	
L	—		3- 2¼	
M	1-8		2- 1⅞	
N	—		7- 4¼	
P	4- 4⅝		5- 4⅞	
Q	4-11½		5- 7¼	

ACCESS AREA

AIRFLOW

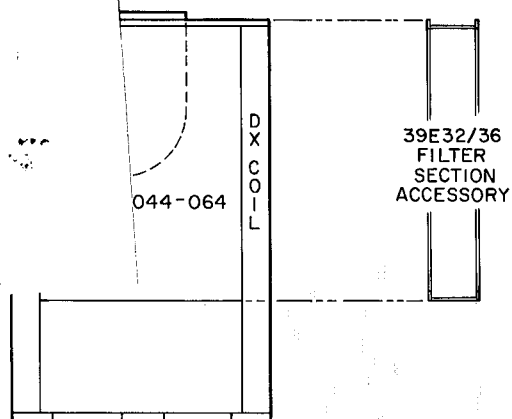


ITS 50BJ, BK044, 054 AND 064

NOTES:

1. Certified dimension drawings available on request
2. Water and refrigerant connections for Unit Sizes 50BJ, BK016 thru 064 are located on right side of unit (facing coil).
3. Filters are not supplied with 044-064 base unit. All models are directly compatible with 39E (Size 32/36) are handling unit components. Refer to 39E literature for physical data for accessories (see diagram below).

REPRINTED WITH CORRECTIONS
DATE 1/86



→ 39E ACCESSORY ASSEMBLY

NOTES:

1. Accessory mounting screws are included with base unit
2. Refer to 39E Series literature for component selection and further details

MODEL 50	BJ	BK	BJ	BK	BJ	BK	BJ	BK	BJ	BK	BJ	BK	BJ	BK
	016		024		028		034		044		054		064	
OPERATING WEIGHT (lbs)	1420	1225	1900	1470	2500	2335	2610	2440	3660	3155	3888	3298	4030	3305
OPERATING CHARGE (lbs) (Note 1)	Refrigerant 22													
System 1	24	15	17	7	24	15	24	15	30	18	45	18	40	18
System 2	—	—	17	7	17	12	24	15	30	18	35	18	40	18
COMPRESSOR — TYPE 06	Serviceable Hermetic, 1750 Rpm													
System 1	DC337	DC537	DC724	DC824	DC337	DC537	DC337	DC537	E2150	E2250	E7265	E7265	E7175	E7275
System 2	—	—	DA724	DA824	DA724	DA824	DA337	DA537	EA150	EA250	EA150	EA250	EF175	EF275
No. of Unloading Cylinders	4	—	4	—	4	—	4	—	2	—	4	—	4	—
No. of Capacity Steps	3	—	6	—	6	—	6	—	4	—	6	—	6	—
HPS Setting (psig)	280	376	280	376	280	376	280	376	395	—	395	—	395	—
LPS Setting (psig)	27	—	27	—	27	—	27	—	27	—	27	—	27	—
CONDENSER (BJ Only)	Size (in.) Type													
No. Type	1 SC	—	2 SC	—	2 SC	—	2 SC	—	2 TT	—	2 TT	—	2 TT	—
Max Working Pressure (psig)	550	—	150 (Note 2)	—	550	—	550	—	400	—	400	—	400	—
Connection Size — (in.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Water Inlet	(1) 2 FPT	—	(1) 2 5 FPT	—	1 5 + 2 FPT	—	(2) 2 FPT	—	(2) 2 1/2 ODS	—	(2) 2 1/2 ODS	—	(2) 2 1/2 ODS	—
Water Outlet	(1) 2 FPT	—	(1) 2 5 FPT	—	1 5 + 2 FPT	—	(2) 2 FPT	—	(1) 3 1/2 ODS	—	(1) 3 1/2 ODS	—	(1) 3 1/2 ODS	—
CONDENSER (BK Only)	Size (in.) Type													
Connection Size — (in.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Liquid	5/8 ODM	—	(2) 5/8 ODM	—	(2) 5/8 ODM	—	1 1/2	—	(2) 7/8 ODS	—	(2) 7/8 ODS	—	(2) 7/8 ODS	—
Discharge	1 1/8 ODM	—	(2) 7/8 ODM	—	7/8 + 1 1/8 ODM	—	—	—	(2) 1 1/8 ODS	—	(2) 1 1/8 ODS	—	(2) 1 1/8 ODS	—
CONDENSATE CONNECTION	Condensate Drain													
Condensate Drain	1 FPT	—	1 FPT	—	1 1/4 M	—	—	—	1 1/2 FPT	—	1 1/2 FPT	—	1 1/2 FPT	—
INDOOR FAN (Note 3)	Adjustable Motor													
Number	2	—	2	—	—	—	—	—	2	—	2	—	2	—
Size (in.)	15 x 11	—	15 x 11	—	—	—	—	—	20 x 18	—	20 x 18	—	20 x 18	—
Nominal Cfm	6,000	—	8,000	—	—	—	—	—	20,000	—	24,000	—	24,000	—
Maximum Allowable Rpm	1200	—	1200	—	—	—	—	—	1200	—	1200	—	1200	—
No. of Belts Fan Pulley PD (in.) (Note 4)	1 9 0	—	2 9 0	—	—	—	—	—	18 7	—	2 18 7	—	2 18 7	—
Fan Shaft Diameter — (in.)	1 3/16	—	1 3/16	—	—	—	—	—	—	—	1 11/16	—	1 11/16	—
Horsepower	—	—	—	—	—	—	—	—	—	—	—	—	25	284T
Standard Frame Size	3 182T	—	5 184T	—	—	—	—	—	—	—	—	—	9 8	—
Motor Pulley A Diameter	4 5-5 5	—	4 6-5 6	—	—	—	—	—	—	—	—	—	10 9	—
Motor Pulley B Diameter	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Motor Efficiency (%)	79	—	84	—	—	—	—	—	—	—	—	—	—	—
Motor Shaft Diameter (in.)	1 1/8	—	1 1/8	—	1 1/8	—	—	—	—	—	—	—	—	—
Center To Center (standard & horizontal)	8 8-11 1	—	8 8-11 1	—	29 8-33 1	—	—	—	—	—	—	—	—	—
Center To Center (alternate top discharge)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fan Speed Range (Rpm)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pulley A	875-1069	—	894-1089	—	925	—	—	—	—	—	—	—	—	—
Pulley B	—	—	—	—	1073	—	—	—	—	—	—	—	—	—
Alternate Frame Size	5 184T	—	7 5 213T	—	10 215T	—	10 21	—	—	—	—	—	—	—
Motor Pulley A Diameter	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Motor Pulley B Diameter	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fan Speed Range (Rpm)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pulley A	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pulley B	—	—	—	—	—	—	—	—	—	—	—	—	—	—
INDOOR COIL	Copper Tubes — Aluminum Plate Fins													
No. of Rows...Fins/in	3 11 0	—	4 11 0	—	4 9 0	—	4 9 0	—	3 15	—	—	—	—	—
Total Face Area (sq ft)	16 3	—	17 4	—	21 9	—	26 2	—	37 5	—	—	—	—	—
RETURN AIR FILTERS	Factory Supplied — Throwaway													
No. Size (in.)	3 16x25x2	—	3 16x25x2	—	6 25x20x2	—	6 25x20x2	—	None	—	None	—	None	—
	3 20x25x2	—	3 20x25x2	—	2 16x20x2	—	2 16x20x2	—	(See Note 5)	—	(See Note 5)	—	(See Note 5)	—

Cfm — Cubic Feet Per Minute
FPT — Female Pipe Thread
Hp — Horsepower
MPT — Male Pipe Thread
ODM — Outside Diameter Male
ODS — Outside Diameter Solder
PD — Pitch Diameter
PDR — Pitch Diameter Range
Rpm — Revolutions Per Minute
SC — Shell and Coil
TT — Tube in Tube

NOTES:

- Operating charge for 50BK units does not include charge for mat. cooled condenser or refrigerant connecting piping. All 50BK units are shipped with a holding charge. Operating charge values are approximate. See Installation Instructions.
- Condenser working pressure is 550 psig if factory installed; dresser adapters are removed and field fabricated manifold is installed. Refer to 50BJ, BK Installation Instructions on condenser connections.
- Motors and drives other than those furnished with units 016-034 must be purchased locally. Installation may require field modification.
- Fan motor pulleys on 50BJ, BK 028, 034, 044, 054, 064 are fixed pitch type. The smaller of the two pulleys is factory installed.
- Refer to 39E Series literature (size 39E32/36) for accessory information.

I. Determine design conditions.

Given:

	50BJ Water Cooled	50BK Air Cooled
Total Cooling Capacity (TC/Btuh)	750,000	700,000
Sensible Cooling Capacity (SHC/Btuh)	615,000	600,000
Evaporator Air Quantity (cfm)	24,000	24,000
Entering Air Conditions (t _{edb})	82	82
(t _{ewb})	67	67
Entering Condenser Water Temp. (t _{ew})	85	—
Entering Condenser Air Temp. (t _{oa})	—	95
External Static Pressure (in. wg.)	1.5	1.5

A. Water Cooled Selection Method — 50BJ

Enter the top and left side of the gross cooling capacity tables of the unit whose capacity is closest to the required capacity. Read down and across to obtain the following data:

Unit Selection — 50BJ064 selected at 24,000 cfm of 82/67 ent. air.

TC = 762,000

SHC = 625,624 (See SHC Correction Table on this page)

Compressor Power Input = 53.5 kW

Condenser: Pressure drop — 10.8 ft

(t_{ew}) — 85 F

(gpm) — 180

B. Air Cooled Selection Method — 50BK

Enter the top and left side of the gross cooling capacity tables of the unit whose capacity is closest to the required capacity. Read down and across to obtain the following data:

Unit Selection — 50BK064 selected at 24,000 cfm of 82/67 ent. air.

TC = 704,000

SHC = 601,624 (See SHC Correction Table on this page)

Compressor Power Input = 59.9 kW

SCT = 125

II. Determine required fan rpm and bhp.

A. Enter the Evaporator Fan Performance curve for the selected unit(s) at given air quantity (24,000 cfm) and external static pressure (1.5 in. wg). Find that for a 50BJ or 50BK064 units, fan rpm is 940 and required bhp is 22.2.

B. In the unit Physical Data table, check the factory-included indoor evaporator fan pulley speed ratings — 922 or 1032 rpm and nominal Hp (25) for the selected unit size. The standard fan drive package and motor fulfill the rpm and bhp requirements.

NOTES:

- Included with each 25-60 ton unit are 2 motor pulleys selected at different speeds. The smaller diameter pulley selected at the lower rpm is factory-installed.
- If unit selection requires an rpm out of standard package range, refer to fan pulley selection table, page 17.

COOLING CAPACITY NOTES

- All 50BJ,BK units are tested and rated in accordance with ARI Standard 360-81
- Operation of 50BK016-034 above 140 F or 50BK044-064 above 145 F saturated condensing temperature is not recommended as it may cause nuisance tripping of the high-pressure switch
- Gross capacities do not include deduction for indoor fan motor heat
- All 50BJ gpm values are based on .0005 fouling factor
- Direct interpolation is permissible. Do not extrapolate
- All combinations use R-22. Unless otherwise designated, ratings are at optimum charge
- Ratings for 50BK units are based on 15° of subcooling. For 0° subcooling reduce capacity by 7.5%
- Most 50BK selections are based on a 30 F ΔT. Selections using over 40 F ΔT are not recommended (ΔT = SDT - EAT)

SHC CORRECTION FACTOR

SHC is based on 80 F db temperature of air entering evaporator coil. Below 80 F db, subtract (corr factor x cfm) from SHC.

Above 80 F db, add (corr factor x cfm) to SHC.

BYPASS FACTOR (BF)	ENTERING AIR DRY-BULB TEMPERATURE (F)					
	79	78	77	76	75	Under 75
	81	82	83	84	85	Over 85
	Correction Factor					
.025	1.07	2.12	3.19	4.25	5.32	Use formula shown below
.05	1.04	2.07	3.11	4.14	5.18	
.10	.98	1.96	2.94	3.92	4.90	
.20	.87	1.74	2.62	3.49	4.36	
.30	.76	1.53	2.29	3.05	3.82	
.35	.71	1.42	2.13	2.83	3.54	

Interpolation is permissible

Correction Factor = $1.10 \times (1 - BF) \times (db - 80)$

GROSS COOLING CAPACITIES **Water-Cooled Unit**

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF													
					3000/.11				4500/.15				6000/.19				7500/.22	
		Ft	Psi		Evap Air — Ewb Temp — (F)													
					72	67	62	72	67	62	72	67	62	72	67	62		
65	13	16	07	TC SHC	178	161	145	194	178	162	203	186	170	210	192	176		
				kW	84	99	113	94	116	138	105	133	161	114	148	176		
	16	22	10	TC SHC	181	165	147	198	181	165	207	190	173	214	197	180		
				kW	85	100	114	95	117	139	106	134	162	115	150	180		
	21	33	14	TC SHC	187	168	151	201	184	167	210	193	176	217	201	183		
				kW	87	102	116	96	118	141	107	135	163	117	151	182		
75	16	22	10	TC SHC	173	157	141	190	173	158	198	182	167	204	188	173		
				kW	82	97	111	92	114	136	103	131	159	113	146	173		
	19	28	12	TC SHC	178	161	145	194	178	162	203	186	170	210	192	176		
				kW	84	99	113	94	116	138	105	133	161	114	148	176		
	26	52	23	TC SHC	181	165	147	198	181	165	207	190	173	214	197	180		
				kW	85	100	114	95	117	139	106	134	162	115	150	180		
85	20	30	13	TC SHC	170	153	138	—	168	154	—	178	161	—	—	167		
				kW	81	96	110	—	113	134	—	129	157	—	—	167		
	28	56	25	TC SHC	173	157	141	190	173	158	198	182	167	204	188	173		
				kW	82	97	111	92	114	136	103	131	159	113	146	173		
	35	80	35	TC SHC	178	161	145	194	178	162	203	186	170	210	192	176		
				kW	84	99	113	94	116	138	105	133	161	114	148	176		
95	37	88	38	TC SHC	170	153	138	—	168	154	—	178	161	—	—	167		
				kW	81	96	110	—	113	134	—	129	157	—	—	167		
	70	270	117	TC SHC	173	157	141	190	173	158	198	182	167	204	188	173		
				kW	82	97	111	92	114	136	103	131	159	113	146	173		

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF										
					4000/.10			6000/.15			8000/.18			10,000/.21	
		Ft	Psi		Evap Air — Ewb Temp — (F)										
					72	67	62	72	67	62	72	67	62	72	67
65	17	1.7	0.8	TC SHC kW	230	208	187	250	228	208	264	241	220	271	249
					110	129	149	125	153	181	136	173	211	150	190
					17.2	17.0	16.6	17.7	17.3	16.9	17.9	17.5	17.1	17.9	17.7
19	1.9	0.9	TC SHC kW	235	213	191	254	233	212	270	247	225	277	254	
				111	131	151	127	156	184	137	177	213	152	197	
				16.4	16.2	15.9	16.8	16.6	16.3	17.0	16.7	16.5	17.0	16.8	
23	2.9	1.3	TC SHC kW	240	218	196	260	238	217	276	253	231	284	260	
				114	133	153	130	158	186	141	179	216	154	199	
				15.4	15.3	15.2	16.1	15.9	15.7	16.3	16.0	15.8	16.3	16.1	
75	23	2.9	1.3	TC SHC kW	230	208	187	250	228	208	264	241	220	271	249
					110	129	149	125	153	181	136	173	211	150	190
					17.2	17.0	16.6	17.7	17.3	16.9	17.9	17.5	17.1	17.9	17.7
27	4.1	1.8	TC SHC kW	235	213	191	254	233	212	270	247	225	277	254	
				111	131	151	127	156	184	137	177	213	152	197	
				16.4	16.2	15.9	16.8	16.6	16.3	17.0	16.7	16.5	17.0	16.8	
40	7.0	3.2	TC SHC kW	240	218	196	260	238	217	276	253	231	284	260	
				114	133	153	130	158	186	141	179	216	154	199	
				15.4	15.3	15.2	16.1	15.9	15.7	16.3	16.0	15.8	16.3	16.1	
85	23	2.9	1.3	TC SHC kW	221	200	179	238	218	199	252	230	210	259	236
					106	126	145	120	148	177	132	170	205	147	191
					19.0	18.6	18.2	19.6	19.1	18.6	19.8	19.3	18.9	19.9	19.5
31	5.2	2.3	TC SHC kW	226	204	183	244	223	204	258	236	216	266	243	
				108	128	148	123	151	179	134	173	209	148	192	
				18.2	17.8	17.4	18.5	18.1	17.7	18.8	18.3	18.0	18.9	18.5	
38	6.6	3.0	TC SHC kW	230	208	187	250	228	208	264	241	220	271	249	
				110	129	149	125	153	181	136	173	211	150	190	
				17.2	17.0	16.6	17.7	17.3	16.9	17.9	17.5	17.1	17.9	17.7	
95	38	6.6	3.0	TC SHC kW	221	200	179	238	218	199	252	230	210	259	236
					106	126	145	120	148	177	132	170	205	147	191
					19.0	18.6	18.2	19.6	19.1	18.6	19.8	19.3	18.9	19.9	19.5
63	16.5	7.2	TC SHC kW	226	204	183	244	223	204	258	236	216	266	243	
				108	128	148	123	151	179	134	173	209	148	192	
				18.2	17.8	17.4	18.5	18.1	17.7	18.8	18.3	18.0	18.9	18.5	

See page 11 for legend

GROSS COOLING CAPACITIES
Water-Cooled Unit

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					5000/ 11			7500/.15			10,000/.18			12,500/.21		
		Ft	Psi		Evap Air — Ewb Temp — (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	27	2.6	1.1	TC SHC kW	291 139 21.4	262 164 21.0	234 186 20.7	324 159 22.4	298 199 21.9	268 231 21.6	343 178 22.7	313 224 22.2	285 269 21.8	352 192 22.8	322 250 22.4	293 293 21.9
	32	3.4	1.5	TC SHC kW	298 142 20.3	269 166 20.0	241 189 19.7	329 161 21.4	304 200 21.0	272 233 20.7	349 180 21.7	319 225 21.3	290 271 20.9	358 195 21.9	328 252 21.5	298 298 21.0
	32	3.4	1.5	TC SHC kW	286 136 22.5	256 116 22.0	229 184 21.6	318 126 23.5	290 193 22.8	262 228 22.4	335 175 23.9	306 222 23.2	278 266 22.7	344 189 24.2	315 246 23.4	287 287 22.8
75	41	5.2	2.3	TC SHC kW	291 139 21.4	262 164 21.0	234 186 20.7	324 159 22.4	298 199 21.9	268 231 21.6	343 178 22.7	313 224 22.2	285 269 21.8	352 192 22.8	322 250 22.4	293 293 21.9
	58	9.5	4.1	TC SHC kW	298 142 20.3	269 166 20.0	241 189 19.7	329 161 21.4	304 200 21.0	272 233 20.7	349 180 21.7	319 225 21.3	290 271 20.9	358 195 21.9	328 252 21.5	298 298 21.0
	31	3.2	1.4	TC SHC kW	272 131 24.7	244 155 24.0	217 178 23.4	— — —	274 179 25.0	247 213 24.2	— — —	292 202 25.5	265 250 24.8	— — —	— — —	277 277 24.9
85	40	5.0	2.2	TC SHC kW	278 134 23.7	250 158 23.1	224 181 22.4	310 153 24.5	283 191 23.9	254 224 23.3	328 172 24.9	299 219 24.3	271 263 23.7	338 188 25.1	309 244 24.5	280 280 23.8
	56	8.7	3.9	TC SHC kW	286 136 22.5	256 116 22.0	229 184 21.6	318 126 23.5	290 193 22.8	262 228 22.4	335 175 23.9	306 222 23.2	278 266 22.7	344 189 24.2	315 246 23.4	287 287 22.8
	55	8.7	3.8	TC SHC kW	272 131 24.7	244 155 24.0	217 178 23.4	— — —	274 179 25.0	247 213 24.2	— — —	292 202 25.5	265 250 24.8	— — —	— — —	277 277 24.9
95	102	24.8	10.7	TC SHC kW	278 134 23.7	250 158 23.1	224 181 22.4	310 153 24.5	283 191 23.9	254 224 23.3	328 172 24.9	299 219 24.3	271 263 23.7	338 188 25.1	309 244 24.5	280 280 23.8

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					6000/ 11			9000/ 15			12,000/.18			15,000/ 21		
		Ft	Psi		Evap Air — Ewb Temp — (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	34	2.5	1.1	TC SHC kW	352	316	282	394	360	325	414	380	346	424	394	359
					166	196	222	192	237	278	223	283	335	244	310	359
					26.6	26.0	25.6	28.0	27.3	26.5	28.4	27.7	27.0	28.6	28.0	27.3
	41	3.4	1.5	TC SHC kW	359	323	289	399	364	329	419	384	350	429	397	363
					169	198	226	194	239	280	225	285	338	246	313	363
						25.2	24.8	24.4	26.7	26.1	25.3	27.1	26.5	25.8	27.3	26.8
75	40	3.2	1.4	TC SHC kW	345	309	276	382	350	316	405	370	337	416	382	349
					163	192	218	187	233	274	220	280	332	242	308	349
					27.8	27.2	26.6	29.4	28.5	27.6	29.8	29.1	28.2	30.1	29.4	28.5
	54	5.3	2.3	TC SHC kW	352	316	282	394	360	325	414	380	346	424	394	359
					166	196	222	192	237	278	223	283	335	244	310	359
						26.6	26.0	25.6	28.0	27.3	26.5	28.4	27.7	27.0	28.6	28.0
85	78	10.0	4.3	TC SHC kW	359	323	289	399	364	329	419	384	350	429	397	363
					169	198	226	194	239	280	225	285	338	246	313	363
					25.2	24.8	24.4	26.7	26.1	25.3	27.1	26.5	25.8	27.3	26.8	26.1
	40	3.2	1.4	TC SHC kW	332	297	266	—	335	303	—	354	321	—	—	332
					158	187	213	—	227	268	—	260	316	—	—	332
						30.6	29.6	28.6	—	31.1	30.1	—	31.6	30.7	—	—
95	55	5.5	2.4	TC SHC kW	338	303	271	376	342	310	396	362	330	407	376	340
					161	190	216	185	230	270	218	278	329	240	306	340
					29.4	28.4	27.6	30.6	29.8	28.8	31.1	30.3	29.4	31.4	30.6	29.7
	74	9.1	4.0	TC SHC kW	345	309	276	382	350	316	405	370	337	416	382	349
					163	192	218	187	233	274	220	280	332	242	308	349
						27.8	27.2	26.6	29.4	28.5	27.6	29.8	29.1	28.2	30.1	29.4

See page 11 for legend

GROSS COOLING CAPACITIES (Water-Cooled Unit)

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					8000/ 04			12,000/ 06			16,000/ 09			20,000/ 11		
		Ft	Psi		Evap Air — Ewb Temp — (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	60	35	15	TC SHC kW	513 244 33.2	470 289 31.8	— — —	557 277 34.6	513 343 33.2	472 407 31.9	581 306 35.4	538 391 34.0	498 467 32.7	595 333 35.8	552 434 34.5	520 514 33.4
	120	110	48	TC SHC kW	527 250 30.2	481 295 29.2	— — —	575 284 31.1	529 350 30.2	485 413 29.3	601 313 31.6	556 398 30.8	514 476 29.9	618 341 32.0	572 442 31.1	536 525 30.4
	160	180	78	TC SHC kW	530 251 29.4	484 296 28.5	— — —	579 286 30.2	532 351 29.4	488 415 28.6	607 316 30.7	559 400 29.9	517 477 29.1	624 343 31.0	576 444 30.2	539 527 29.5
75	60	35	15	TC SHC kW	495 236 35.7	453 281 34.1	— — —	537 269 37.3	494 335 35.6	454 397 34.2	559 298 38.1	516 382 36.5	480 457 35.1	574 325 38.6	532 426 37.1	501 500 35.9
	120	110	48	TC SHC kW	509 242 32.8	464 287 31.7	— — —	555 276 34.0	509 341 32.8	467 404 31.7	579 306 34.6	534 389 33.5	494 465 32.5	594 332 34.9	550 433 33.9	516 511 33.0
	160	180	78	TC SHC kW	512 243 32.1	467 288 31.0	— — —	559 278 33.1	513 343 32.1	470 405 31.1	584 307 33.6	538 391 32.6	498 467 31.7	600 334 34.0	555 435 33.0	520 514 32.2
85	60	35	15	TC SHC kW	476 228 38.1	436 273 36.4	397 316 34.7	515 261 39.8	474 326 38.0	436 388 36.4	537 291 40.7	495 374 39.0	460 445 37.4	550 317 41.2	509 416 39.5	482 482 38.3
	120	110	48	TC SHC kW	490 234 35.5	447 278 34.2	— — —	533 268 36.8	488 333 35.4	448 394 34.2	556 297 37.5	512 380 36.2	474 454 35.0	572 325 37.9	527 423 36.6	496 495 35.6
	160	180	78	TC SHC kW	493 235 34.8	450 280 33.5	— — —	537 269 36.0	492 334 34.7	451 396 33.6	561 299 36.6	516 382 35.4	478 455 34.4	576 326 37.0	531 425 35.8	499 498 34.9
95	60	35	15	TC SHC kW	457 220 40.5	417 264 38.5	379 307 36.7	494 253 42.3	453 317 40.3	416 378 38.5	513 282 43.2	473 364 41.3	440 432 39.7	526 309 43.8	485 406 41.9	462 462 40.8
	120	110	48	TC SHC kW	470 226 38.1	428 270 36.6	389 312 35.0	510 259 39.5	467 324 38.0	428 384 36.6	532 288 40.3	489 371 38.7	454 441 37.5	545 315 40.7	503 414 39.3	476 476 38.3
	160	180	78	TC SHC kW	473 227 37.5	431 271 36.0	391 313 34.6	514 261 38.8	471 325 37.4	431 386 36.0	536 290 39.4	493 373 38.1	457 443 36.9	550 317 39.9	507 415 38.5	479 479 37.6

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					10,000/ 02			15,000/ .04			20,000/ 05			25,000/ 07		
		Ft	Psi		Evap Air — Ewb Temp — (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	80	34	15	TC SHC Kw	637 303 37.5	583 361 35.8	534 418 34.4	688 346 39.0	636 432 37.5	587 512 36.0	716 385 39.8	664 495 38.3	621 595 37.0	731 421 40.2	682 554 38.8	649 649 37.8
	150	100	43	TC SHC kW	649 309 34.5	594 367 33.4	543 423 32.2	705 353 35.6	650 438 34.5	599 520 33.5	736 392 36.2	680 502 35.1	635 603 34.2	755 429 36.6	699 561 35.4	663 661 34.7
	200	160	69	TC SHC kW	653 310 33.6	597 368 32.6	— — —	711 355 34.6	654 440 33.6	602 522 32.7	741 394 35.2	685 504 34.1	638 604 33.3	760 431 35.5	705 563 34.5	667 665 33.8
75	80	34	15	TC SHC kW	614 294 40.4	563 352 38.7	515 408 37.1	664 337 42.1	612 422 40.3	565 503 38.8	689 376 42.9	640 486 41.3	598 581 39.8	706 412 43.5	657 543 41.9	628 628 40.9
	150	100	43	TC SHC kW	628 300 37.7	574 357 36.3	524 413 35.0	681 343 38.9	627 428 37.6	577 510 36.4	708 382 39.5	656 492 38.3	612 590 37.3	726 419 39.9	674 550 38.7	641 641 38.0
	200	160	69	TC SHC kW	632 301 36.8	577 359 35.6	— — —	686 345 37.9	631 430 36.8	581 511 35.7	714 385 38.5	660 494 37.4	615 592 36.4	733 521 38.9	679 552 37.8	645 645 37.1
85	80	34	15	TC SHC kW	592 284 43.4	542 342 41.5	495 398 39.7	639 328 45.2	588 412 43.3	543 492 41.5	663 367 46.1	613 475 44.3	575 566 42.7	677 403 46.7	631 532 44.9	606 606 44.0
	150	100	43	TC SHC kW	605 290 40.8	553 347 39.3	504 402 37.8	655 334 42.2	602 418 40.7	555 498 39.3	682 373 43.0	629 481 41.5	588 575 40.3	697 409 43.4	647 539 42.0	618 618 41.2
	200	160	69	TC SHC kW	609 291 40.0	556 349 38.6	511 406 35.8	660 335 41.3	606 419 39.9	558 500 38.6	687 375 42.0	633 483 40.6	592 577 39.5	703 411 42.4	652 541 41.1	622 622 40.3
95	80	34	15	TC SHC kW	568 274 46.3	519 332 44.2	473 387 42.2	612 318 48.3	562 401 46.1	519 480 44.2	634 356 49.2	587 464 47.2	551 548 45.6	648 393 49.8	601 520 47.8	581 581 46.9
	150	100	43	TC SHC kW	581 280 44.0	530 337 42.2	482 392 40.5	628 323 45.5	576 407 43.8	531 482 42.2	653 363 46.3	601 470 44.6	564 559 43.4	668 399 46.8	619 527 45.2	595 595 44.4
	200	160	69	TC SHC kW	584 281 43.2	533 338 41.6	489 395 38.7	632 325 44.6	580 408 43.0	534 488 41.6	657 364 45.4	605 472 43.8	567 561 42.6	673 401 45.8	623 529 44.3	598 598 43.6

See page 11 for legend

GROSS COOLING CAPACITIES (Water-Cooled Unit)

EWT	GPM	PRESSURE DROP			Evap Air — Cfm/BF											
					16,000/.04			20,000/.05			22,000/.06			24,000/.07		
		Ft	Psi		Evap Air — Ewb Temp (F)											
					72	67	62	72	67	62	72	67	62	72	67	62
65	90	3.4	1.5	TC	816	752	692	846	782	725	856	793	737	866	804	749
				SHC	401	492	581	423	544	650	443	569	681	463	594	711
				kW	50.6	48.1	45.8	51.7	49.2	47.1	52.1	49.6	47.5	52.5	50.1	48.0
	180	10.8	4.7	TC	843	775	711	877	809	746	888	821	760	899	832	774
				SHC	412	503	591	444	556	662	459	571	694	474	605	725
				kW	46.0	44.1	42.3	46.9	45.0	43.3	47.1	45.3	43.6	47.4	45.7	44.0
240	18.0	7.8	TC	850	781	716	884	815	751	896	827	765	908	839	779	
			SHC	415	505	593	447	558	664	463	583	696	478	608	728	
			kW	44.8	43.0	41.4	45.6	43.9	42.3	45.9	44.2	42.6	46.2	44.5	43.0	
75	90	3.4	1.5	TC	785	722	664	813	750	695	823	761	708	832	771	720
				SHC	389	479	567	421	531	636	436	556	665	451	580	694
				kW	54.5	51.7	49.3	55.6	52.9	50.6	56.0	53.3	51.1	56.5	53.8	51.6
	180	10.8	4.7	TC	811	745	683	843	776	716	854	787	729	864	798	742
				SHC	399	489	576	432	542	646	447	567	677	462	591	708
				kW	50.0	47.9	45.9	51.0	48.9	47.0	51.3	49.2	47.4	51.7	49.6	47.8
240	18.0	7.8	TC	818	750	687	850	782	721	861	794	735	872	804	748	
			SHC	402	492	579	434	544	649	450	569	680	465	594	711	
			kW	48.8	46.9	45.0	49.7	47.8	46.0	50.0	48.1	46.4	50.4	48.4	46.8	
85	90	3.4	1.5	TC	751	691	636	779	718	665	788	727	677	796	736	689
				SHC	375	466	553	408	517	620	423	541	648	437	565	675
				kW	58.2	55.4	52.8	59.6	56.6	54.2	60.0	57.0	54.7	60.4	57.5	55.3
	180	10.8	4.7	TC	777	713	653	806	742	685	817	752	698	827	762	711
				SHC	386	476	562	418	528	631	434	553	660	449	577	689
				kW	54.1	51.8	49.6	55.1	52.8	50.8	55.4	53.1	51.2	55.8	53.5	51.7
240	18.0	7.8	TC	784	718	658	813	747	690	824	758	703	834	768	716	
			SHC	388	478	564	421	530	633	436	555	663	451	579	692	
			kW	53.0	50.8	48.7	53.9	51.7	49.8	54.2	52.0	50.2	54.6	52.4	50.7	
95	90	3.4	1.5	TC	719	659	606	743	684	635	751	693	647	759	701	659
				SHC	363	453	538	395	504	603	410	528	629	425	552	654
				kW	62.2	59.0	56.3	63.4	60.3	57.7	63.8	60.7	58.3	64.3	61.2	59.0
	180	10.8	4.7	TC	742	680	623	769	707	653	779	717	666	788	726	678
				SHC	372	461	547	405	513	614	420	538	642	435	562	669
				kW	58.2	55.6	53.3	59.2	56.7	54.5	59.6	57.1	55.0	60.0	57.5	55.5
240	18.0	7.8	TC	748	685	627	775	712	658	785	722	671	794	731	683	
			SHC	375	463	549	407	515	616	422	540	644	437	564	672	
			kW	57.1	54.7	52.5	58.1	55.7	53.7	58.4	56.0	54.1	58.8	56.4	54.6	

GROSS COOLING CAPACITIES
Air-Cooled Unit

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		3000/ 10			4500/ .15			6000/ .19			7500/ 22		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	181	166	151	198	182	166	207	190	176	212	196	184
	SHC	87	103	119	99	122	145	109	139	167	119	155	184
	kW	15.1	14.5	13.8	15.8	15.1	14.5	16.1	15.5	14.9	16.3	15.7	15.2
	SCT	116	114	112	118	116	114	119	117	115	120	118	116
95	TC	173	158	144	188	173	158	196	181	167	201	186	176
	SHC	83	100	115	95	119	141	106	135	163	115	151	176
	kW	16.4	15.6	14.9	17.1	16.3	15.6	17.4	16.7	16.1	17.7	17.0	16.5
	SCT	126	124	122	128	126	124	129	127	125	130	128	126
105	TC	165	151	138	178	164	150	186	171	159	190	176	168
	SHC	80	96	112	92	115	137	102	131	157	111	147	168
	kW	17.6	16.7	15.9	18.3	17.5	16.7	18.7	17.9	17.2	19.0	18.2	17.7
	SCT	136	134	132	138	136	134	139	137	135	140	138	137
115	TC	157	143	131	169	155	142	175	161	151	179	166	160
	SHC	76	93	108	88	111	133	98	128	151	107	143	160
	kW	19.0	17.8	16.9	19.5	18.6	17.7	20.0	19.0	18.3	20.2	19.3	18.9
	SCT	146	144	142	148	146	144	149	147	145	149	147	147

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		4000/ .12			6000/ 15			8000/ .18			10,000/ .21		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	227	208	190	250	230	211	262	242	222	270	248	228
	SHC	115	129	149	124	155	183	137	175	214	149	195	228
	kW	18.8	18.0	17.2	19.1	18.5	17.6	19.8	18.8	18.0	19.8	19.0	18.3
	SCT	112	110	108	115	113	111	116	114	112	117	115	113
95	TC	218	200	182	240	220	202	250	230	212	257	237	218
	SHC	104	125	145	119	150	179	133	170	207	146	191	218
	kW	20.5	19.5	18.6	21.0	20.0	19.2	21.5	20.5	19.6	21.8	21.3	20.9
	SCT	121	119	117	125	122	120	126	124	122	126	124	122
105	TC	209	190	176	229	210	192	239	220	201	245	226	207
	SHC	101	121	143	116	145	173	129	166	200	142	187	207
	kW	22.2	21.4	20.1	22.8	21.8	20.6	23.3	22.2	21.2	23.7	22.6	21.5
	SCT	131	129	127	134	132	130	135	133	131	136	134	132
115	TC	199	181	166	218	200	182	227	209	191	232	215	200
	SHC	97	117	137	111	141	169	124	162	191	137	182	200
	kW	23.9	22.9	21.6	24.6	23.4	22.1	25.2	24.0	22.7	25.5	24.3	23.0
	SCT	141	139	137	144	142	139	145	143	141	145	143	141

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		5000/ 12			7500/ 15			10,000/ .18			12,500/ 21		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	280	255	232	318	291	266	332	306	281	342	315	290
	SHC	134	159	184	158	196	234	175	224	272	191	250	290
	kW	24.5	23.3	22.5	25.7	24.5	23.4	26.4	25.2	24.1	26.7	25.6	24.4
	SCT	112	110	108	115	113	111	116	114	112	117	115	113
95	TC	268	243	224	303	277	244	316	291	267	325	299	275
	SHC	129	153	180	152	191	228	169	218	264	185	244	275
	kW	26.5	24.9	23.9	27.8	26.4	25.2	28.5	27.1	25.9	28.9	27.6	26.3
	SCT	122	119	117	125	122	120	126	124	121	127	124	122
105	TC	256	233	214	287	264	241	300	275	243	307	283	260
	SHC	123	149	174	146	185	222	163	212	242	178	237	260
	kW	28.3	26.9	25.3	29.8	28.4	26.9	30.5	29.1	27.6	31.0	29.5	28.1
	SCT	131	129	126	134	132	130	135	133	130	136	134	131
115	TC	244	220	203	272	249	228	275	260	238	280	267	245
	SHC	119	143	170	141	179	216	151	206	238	166	231	245
	kW	30.5	29.0	27.4	31.8	30.1	28.6	32.3	30.8	29.3	32.5	31.3	29.8
	SCT	141	139	137	143	141	139	144	142	140	144	143	141

See page 14 for legend

GROSS COOLING CAPACITIES **Air-Cooled Unit**

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		6000/.12			9000/.15			12,000/.18			15,000/.21		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	342	315	284	386	355	325	405	374	343	416	385	355
	SHC	163	195	224	190	235	281	208	267	322	228	298	355
	kW	30.2	28.7	27.7	31.5	30.1	28.7	32.3	30.9	29.5	32.7	31.3	30.1
	SCT	112	109	107	114	112	110	115	113	111	116	114	112
95	TC	328	300	271	369	338	309	386	358	326	396	365	337
	SHC	157	188	217	183	229	272	204	261	316	222	289	337
	kW	32.5	30.8	29.5	34.0	32.4	30.9	34.7	33.2	31.7	35.2	33.7	32.3
	SCT	121	119	117	123	121	119	124	122	120	125	123	121
105	TC	314	285	258	350	321	288	366	332	302	375	346	318
	SHC	151	181	211	177	221	266	196	253	301	216	282	318
	kW	34.8	32.9	31.4	36.3	34.5	33.0	37.2	35.5	33.7	37.6	36.0	34.3
	SCT	130	128	126	133	131	128	134	131	129	134	132	130
115	TC	298	270	245	331	298	272	346	318	275	353	325	293
	SHC	144	174	204	170	214	259	188	245	275	208	277	293
	kW	37.1	35.0	33.1	38.6	36.8	34.9	39.4	37.6	35.8	40.0	38.2	36.3
	SCT	140	137	135	142	140	138	143	141	138	144	142	139

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		8000/0.04			12,000/0.06			16,000/0.09			20,000/0.11		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	486	445	406	530	485	446	551	509	472	567	522	492
	SHC	232	277	321	267	332	394	296	380	453	324	423	493
	kW	37.1	35.4	33.9	38.8	37.1	35.5	39.6	38.0	36.5	40.2	38.5	37.3
	SCT	114	112	110	117	114	112	118	116	114	119	116	115
95	TC	466	424	387	504	462	424	524	484	449	538	496	471
	SHC	224	268	311	258	322	383	286	369	439	314	412	471
	kW	39.7	37.8	36.0	41.5	39.6	37.8	42.3	40.5	39.0	43.0	41.1	40.0
	SCT	124	121	119	126	123	121	127	125	123	128	125	124
100	TC	454	415	377	490	451	414	509	470	437	522	484	459
	SHC	219	263	306	253	318	378	281	364	431	308	407	459
	kW	41.0	39.0	37.1	42.8	40.8	39.0	43.7	41.7	40.1	44.3	42.4	41.3
	SCT	128	126	124	130	128	126	131	129	127	132	130	128
105	TC	443	403	367	476	438	402	496	455	426	506	468	449
	SHC	214	258	301	247	312	372	276	358	424	303	400	449
	kW	42.3	40.2	38.1	44.0	42.0	40.0	45.0	43.0	41.4	45.6	43.6	42.6
	SCT	133	130	128	134	132	130	136	133	132	136	134	133
115	TC	418	381	347	449	412	379	467	428	404	476	440	426
	SHC	204	248	291	237	302	360	266	349	403	293	388	426
	kW	44.6	42.4	40.1	46.5	44.2	42.2	47.5	45.3	43.7	48.2	46.0	45.1
	SCT	142	139	137	143	141	139	144	142	141	145	143	142

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		10,000/0.02			15,000/0.04			20,000/0.05			25,000/0.07		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	590	540	493	638	586	541	663	612	573	678	630	602
	SHC	284	342	397	327	411	492	366	474	565	403	532	602
	kW	43.0	41.1	39.2	44.8	42.9	41.2	45.8	43.9	42.4	46.3	44.5	43.5
	SCT	114	112	110	116	114	112	117	115	113	118	116	115
95	TC	565	515	470	607	558	516	631	582	547	645	598	576
	SHC	274	330	386	316	400	478	355	462	545	392	518	576
	kW	46.1	43.9	41.8	47.9	45.8	43.9	49.0	46.8	45.3	49.6	47.5	46.6
	SCT	123	121	119	125	123	121	126	124	122	127	125	124
100	TC	551	504	459	593	545	503	616	567	535	629	581	564
	SHC	268	325	380	311	394	472	350	456	534	386	511	564
	kW	47.5	45.3	43.1	49.6	47.3	45.3	50.6	48.3	46.8	51.2	49.0	48.2
	SCT	128	125	123	130	127	126	131	128	127	131	129	128
105	TC	538	491	448	576	529	489	597	552	521	610	566	551
	SHC	263	319	375	305	388	464	343	450	521	380	505	551
	kW	49.1	46.7	44.4	51.0	48.6	46.6	52.0	49.8	48.2	52.7	50.5	49.8
	SCT	132	130	128	134	132	130	135	133	131	136	134	133
115	TC	509	464	423	543	501	462	562	520	496	574	533	523
	SHC	252	308	362	294	376	449	331	436	496	368	489	523
	kW	52.0	49.3	46.8	53.9	51.4	49.2	55.0	52.5	51.2	55.7	53.4	52.7
	SCT	141	139	137	143	141	139	144	142	141	144	142	142

See page 14 for legend

GROSS COOLING CAPACITIES Air-Cooled Unit

Cond Ent Air Temp (F)		Evap Air — Cfm/BF											
		16,000/0.04			20,000/0.05			22,000/0.06			24,000/0.07		
		Evap Air — Ewb Temp — (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
85	TC	759	696	639	785	723	669	797	733	681	806	743	694
	SHC	378	468	554	410	520	621	426	544	651	441	569	679
	kW	56.8	54.0	51.5	57.9	55.2	52.8	58.4	55.7	53.4	58.8	56.1	54.0
	SCT	117	114	112	118	115	113	118	116	113	119	116	114
95	TC	722	661	606	745	686	635	756	695	647	765	704	660
	SHC	364	453	538	396	504	604	411	529	631	427	553	655
	kW	60.8	57.8	55.0	62.0	59.0	56.5	62.5	59.5	57.1	62.9	59.9	57.7
	SCT	125	123	121	126	124	122	127	124	122	127	125	123
100	TC	701	642	591	724	666	617	734	674	629	742	683	642
	SHC	357	445	531	388	496	593	403	520	619	419	544	641
	kW	62.8	59.7	56.9	64.1	60.9	58.3	64.5	61.5	59.0	65.0	61.8	59.6
	SCT	130	127	125	131	128	126	131	129	127	131	129	127
105	TC	684	626	574	705	648	601	715	657	614	719	665	624
	SHC	350	438	522	382	489	584	397	513	609	411	537	624
	kW	64.9	61.6	58.6	66.2	62.9	60.2	66.6	63.4	61.0	67.0	63.8	61.6
	SCT	134	132	130	135	133	131	136	133	131	136	134	132
115	TC	641	588	541	663	609	567	669	616	580	675	622	592
	SHC	334	423	504	367	473	562	381	496	580	396	519	592
	kW	68.8	65.3	62.1	70.0	66.6	63.9	70.6	67.0	64.7	70.9	67.5	65.6
	SCT	143	141	139	144	142	140	144	142	140	144	142	141

LEGEND

BF — Bypass Factor
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input (Kilowatts)

SCT — Saturated Condensing Temperature (F)
SHC — Sensible Heat Capacity (1000 Btuh)
TC — Total Capacity (1000 Btuh)

Head Pressure Control

One of the most common ways of controlling head pressure in air conditioning units with water-cooled condenser is with a field-supplied water regulating valve.

The valve is designed to open when it senses a rise in head pressure. The resulting increase in water flow thru the condenser carries away excess heat and head pressure drops. Refer to 50BJ,BK Installation Instructions for further information.

HEATING COIL RATINGS*

UNIT 50BJ,BK	AIR CFM	1-ROW NF STEAM†		2-ROW HOT WATER‡			
		TC	LAT	TC	LAT	Gpm	PD
016	4,500	186	98	361	134	36	1.9
	6,000	217	94	428	126	43	2.5
	7,500	248	91	490	121	49	3.4
024	6,000	209	92	410	126	41	2.4
	8,000	246	88	500	118	50	3.5
	10,000	272	85	580	114	58	3.9

Values in italics also apply to 2-row NF steam

LAT — Leaving Air Temperature (F)
PD — Pressure Drop (ft of water)
TC — Total Capacity (1000 Btuh)

*Refer to 39 Series Coils and Heat Exchangers literature for 40-60 ton units
†NF — Nonfreeze coil ratings based on 2 psig steam, 60 F entering air
‡2-row hot water coil ratings based on 200 F entering water temperature, 20 F water temperature drop, 60 F entering air

ACCESSORY GRILLE STATIC PRESSURE LOSSES (in. wg)

MODEL 50BJ,BK	AIR QTY (Cfm)	ACCY INLET GRILLE
016	3,000	01
	4,500	02
	6,000	03
	7,500	05
024	4,000	02
	6,000	03
	8,000	06
	10,000	08

HEATING CAPACITY FACTORS

STEAM COIL						
Steam Pressure (Psig)	Entering Air Temperature (F)					
	40	50	60	70	80	
0	1.11	1.03	.96	.89	.82	
2	1.14	1.07	1.00	.93	.86	
5	1.19	1.11	1.05	.98	.91	
10	1.25	1.18	1.11	1.04	.97	
HOT WATER COIL						
Water Temp (F) Drop	Entering Water Temp (F)	Entering Air Temperature (F)				
		40	50	60	70	80
10	180	1.15	1.06	.96	.87	.77
	200	1.35	1.25	1.16	1.07	.97
	220	1.54	1.44	1.35	1.26	1.17
20	180	.98	.88	.79	.70	.60
	200	1.18	1.09	1.00	.90	.81
	220	1.37	1.28	1.20	1.11	1.01
30	180	.79	.70	.61	.52	.42
	200	1.00	.91	.85	.73	.64
	220	1.22	1.12	1.03	.94	.85

NOTES (for Heating Coil Rating table):

- 1 Maximum allowable leaving air temperature 140 F
- 2 Maximum operating limit for heating coils is 200 psig or 400 F
- 3 To obtain capacities other than those given above, multiply the Btuh value from the Heating Coil Ratings table by the proper value from the Heating Capacity Factors table
- 4 Formulas:

$$\text{Final temp (F)} = \text{ent db (F)} + \frac{\text{Btuh}}{1.1} \times \text{cfm}$$

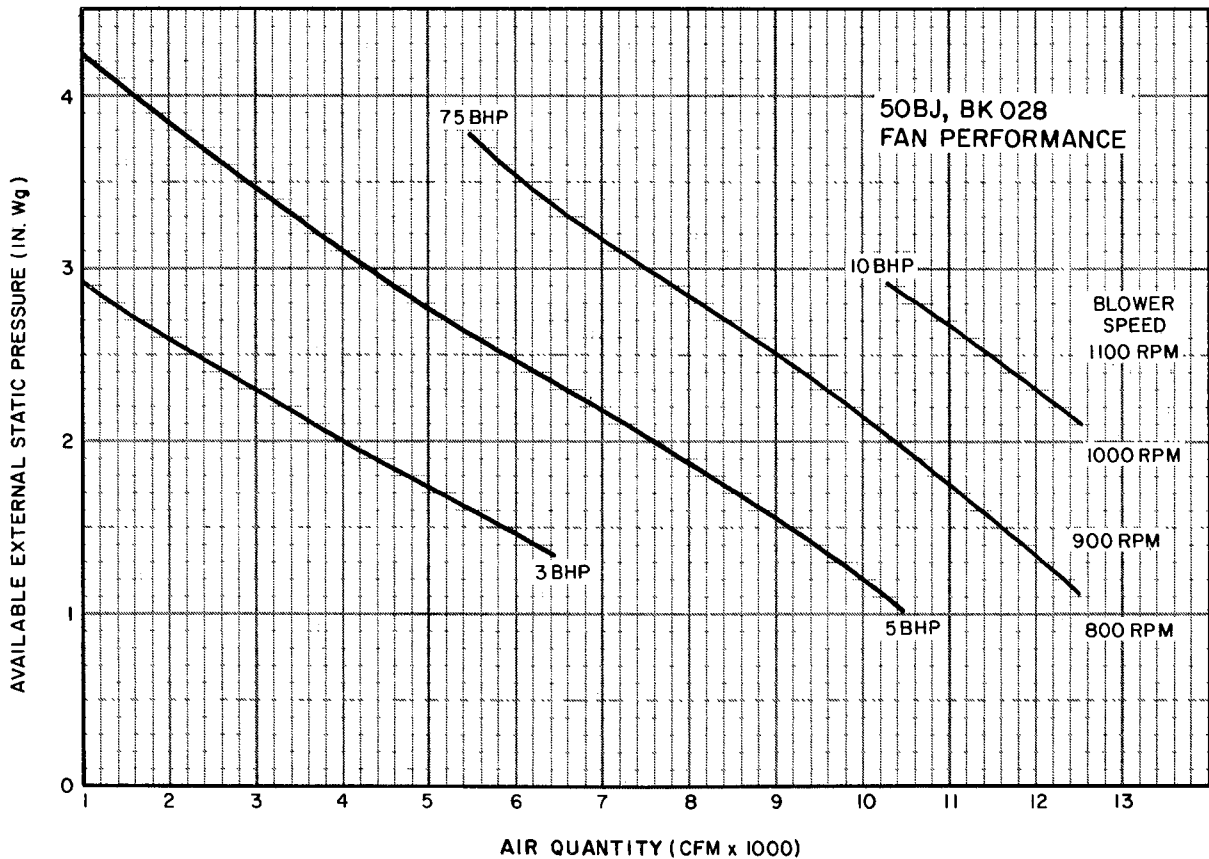
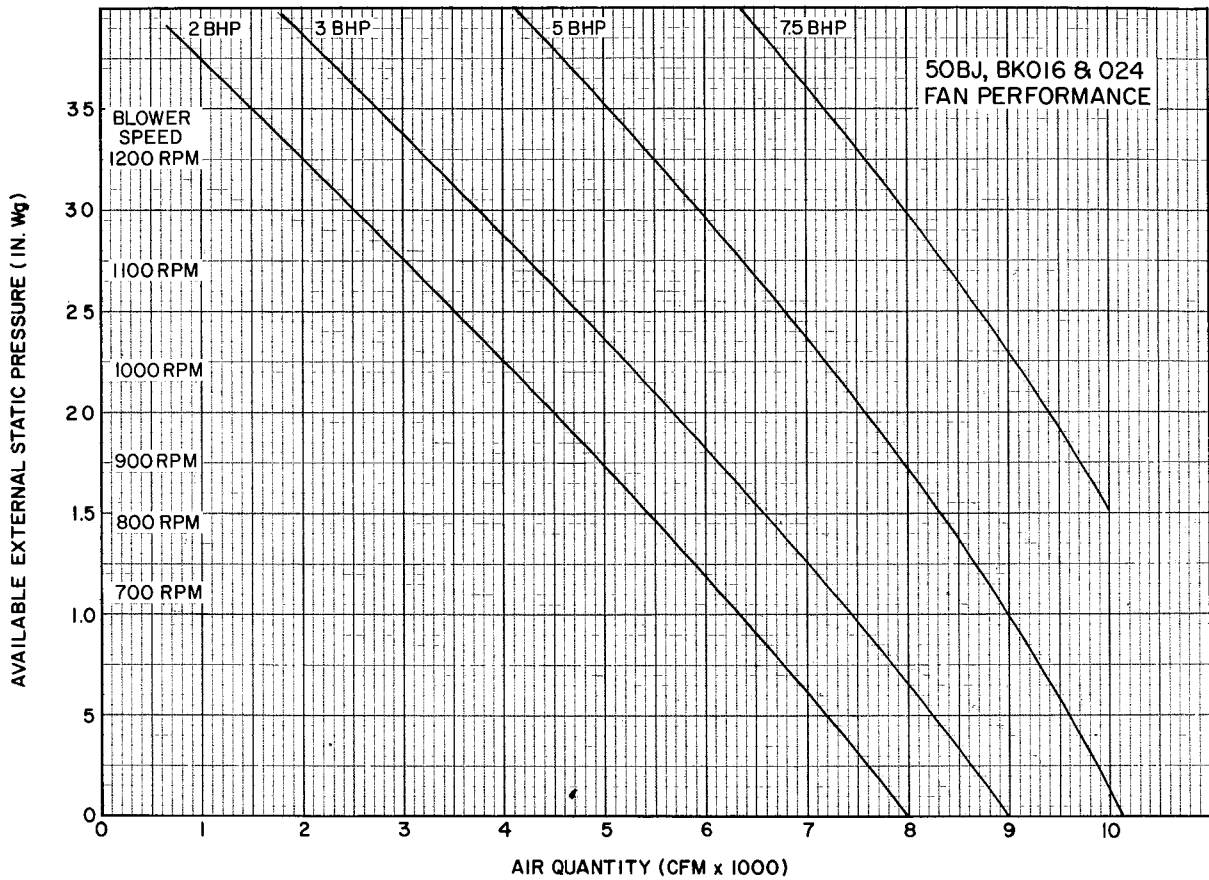
$$\text{Gpm} = \frac{\text{Btuh}}{500 \times \text{water temp drop (F)}}$$

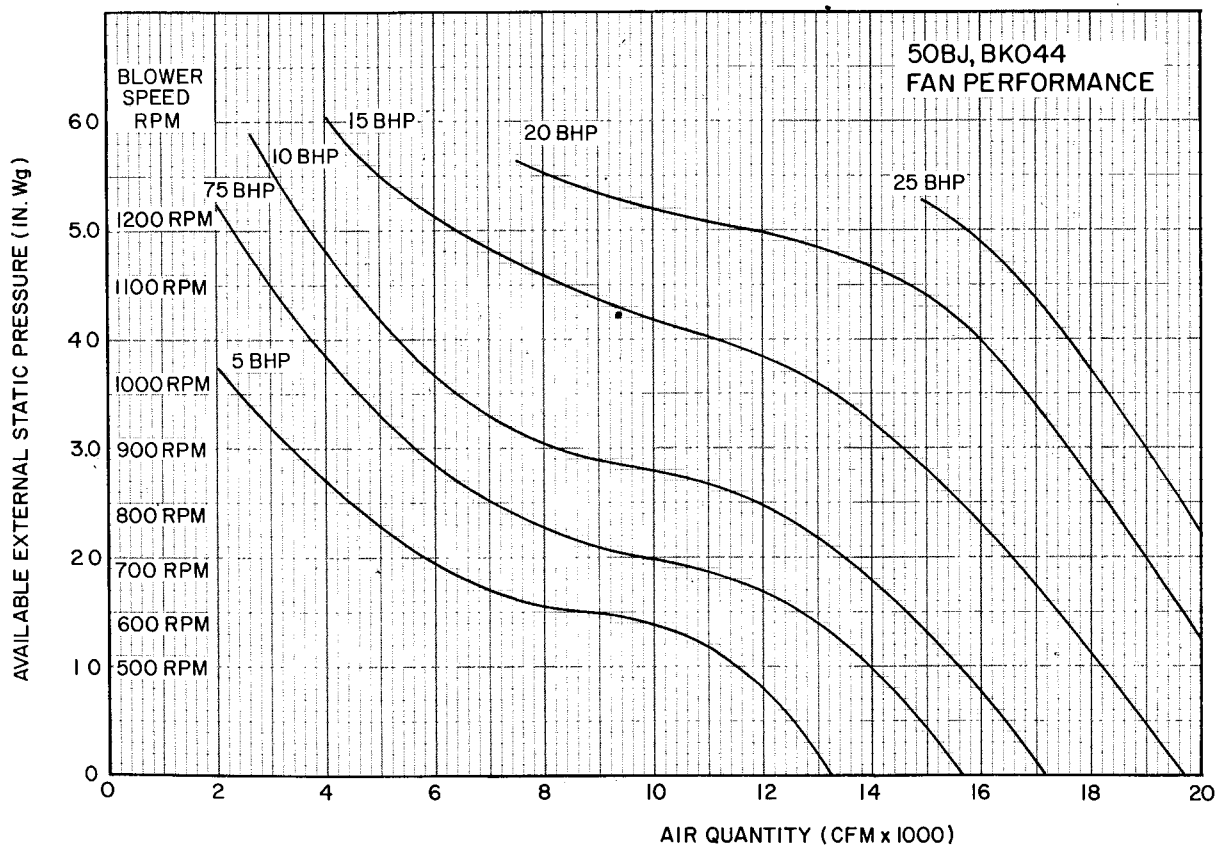
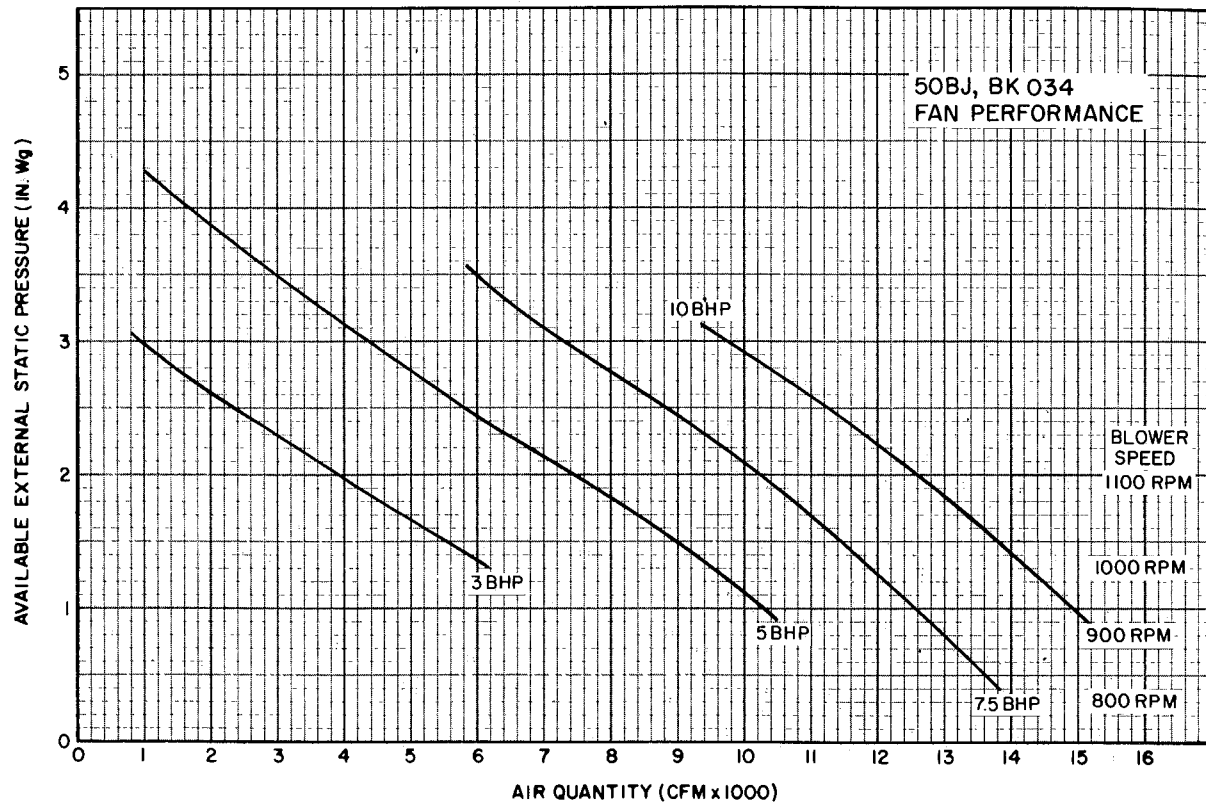
- 5 Reduced airflow (dirty filters, loose or broken fan belt, etc.) over coil during cooling cycle may result in freeze-up of nearby heating coil. Since units normally require a low-pressure switch cutout setting at about 5 F, use of a freeze-up thermostat is recommended if heating coil is not drained or filled with an antifreeze solution
- 6 Field-supplied thermostat and control valve are required when using accessory heating coils

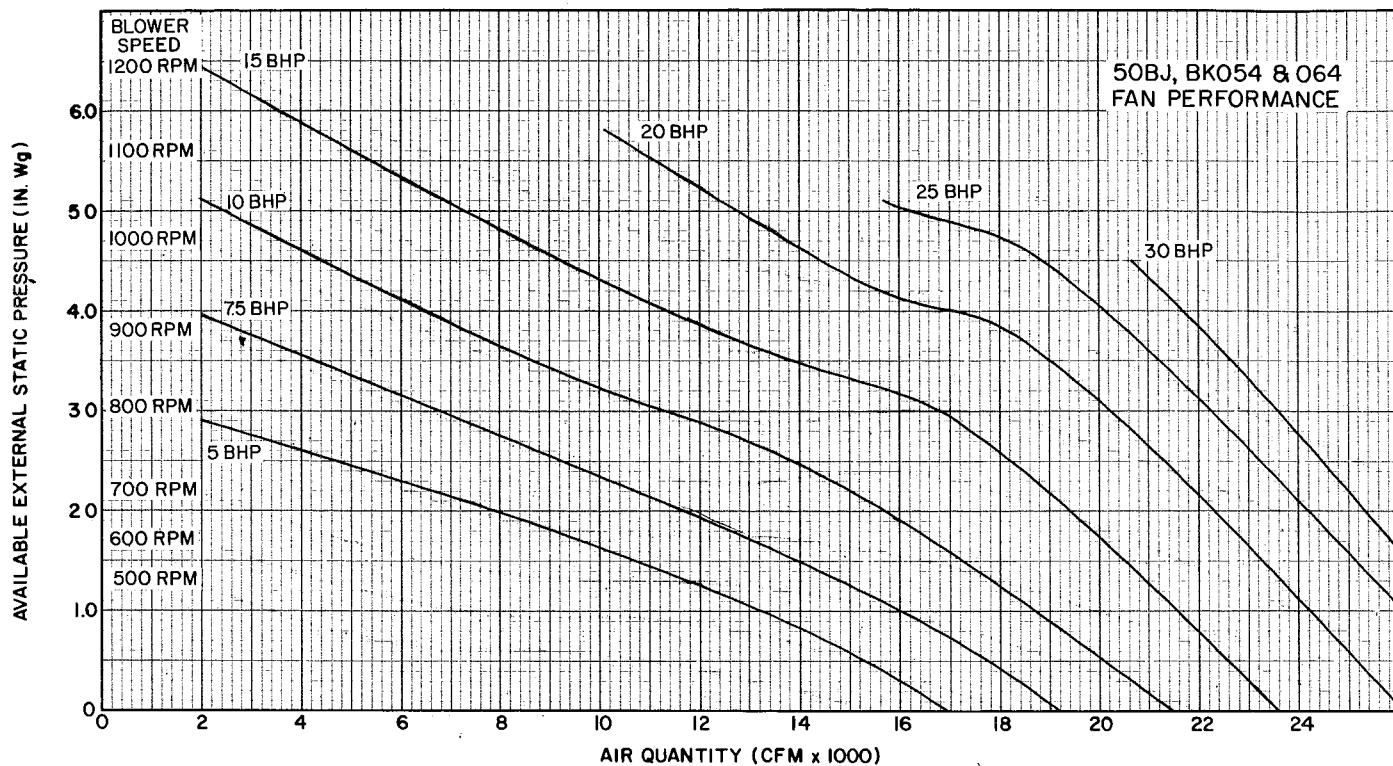
FAN PERFORMANCE NOTE

Fan performance is based on wet coil, clean filters and deducted casing losses Refer to Physical Data Table for average efficiencies

$$kW = \frac{Bhp \times .746}{\text{Efficiency}}$$







FAN PULLEY SELECTION TABLE
(50BJ, BK044-064)

FAN RPM	MOTOR PULLEY DIA. (in.)	FAN PULLEY DIA. (in.)	5V BELT SIZE (2 Req'd) (BELT LENGTH in.)
600	8.0	23.6	90
650	7.1	18.7	80
700	7.5	18.7	80
738	8.0	18.7	85
789	8.5	18.7	90
845	9.0	18.7	85
865	9.25	18.7	85
915	9.75	18.7	85
961	10.3	18.7	85
1,000	8.0	14.0	75
1,028	10.9	18.7	85
1,054	11.3	18.7	90
1,100	11.8	18.7	90
1,166	12.5	18.7	90
1,200	9.0	13.2	71

☐ Shaded values indicate standard or optional pulley combinations available as shown in Physical Data Table. All other combinations are field-supplied.

UNIT	VOLTS/PH/HZ	VOLTAGE RANGE		COMP #1		COMP #2		INDOOR FAN MOTOR		POWER SUPPLY	
		Min	Max	RLA	LRA	RLA	LRA	Hp	FLA	MCA*	MOCP†
50BJ016	208/230/3/60	187	254	50.0	191	—	—	3	9.2	71.7	110
	460/3/60	414	508	22.1	86	—	—	3	4.6	32.2	50
	575/3/60	518	632	17.9	69	—	—	3	3.7	26.2	40
50BJ024	208/230/3/60	187	254	36.0	137	36.0	137	5	13.2	94.2	125
	460/3/60	414	508	16.0	62	16.0	62	5	6.6	42.6	50
	575/3/60	518	632	12.9	50	12.9	50	5	5.6	35.1	45
50BJ028	208/230/3/60	187	254	49.3	191	35.7	137	7½	22.0	120.0	150
	460/3/60	414	508	22.2	86	16.0	62	7½	11.0	54.8	70
	575/3/60	518	632	18.0	69	13.0	50	7½	8.7	44.2	60
50BJ034	208/230/3/60	187	254	49.3	191	49.3	191	7½	22.0	132.9	175
	460/3/60	414	508	22.2	86	22.2	86	7½	11.0	61.0	80
	575/3/60	518	632	18.0	69	18.0	69	7½	8.7	49.2	60
50BJ044	208/230/3/60	187	254	57.9	283	57.9	283	15	46.2	178.5	225
	460/3/60	414	508	26.5	142	26.5	142	15	21.0	82.7	100
	575/3/60	518	632	22.2	98	22.2	98	15	15.4	64.7	80
50BJ054	208/230/3/60	187	254	80.8	446	60.0	283	20	59.4	222.4	300
	460/3/60	414	508	35.8	223	26.5	142	20	27.0	100.3	125
	575/3/60	518	632	30.0	164	22.2	98	20	20.0	81.5	110
50BJ064	208/230/3/60	187	254	91.5	446	91.5	446	25	74.8	282.7	350
	460/3/60	414	508	42.6	253	42.6	253	25	34.0	131.9	150
	575/3/60	518	632	32.2	164	32.2	164	25	25.6	100.1	125
50BK016	208/230/3/60	187	254	64.0	266	—	—	3	9.2	89.2	150
	460/3/60	414	508	29.0	120	—	—	3	4.6	40.9	60
	575/3/60	518	632	23.0	96	—	—	3	3.7	32.5	50
50BK024	208/230/3/60	187	254	45.0	170	45.0	170	5	13.2	114.5	150
	460/3/60	414	508	20.0	77	20.0	77	5	6.6	51.6	70
	575/3/60	518	632	16.0	62	16.0	62	5	5.6	41.6	50
50BK028	208/230/3/60	187	254	64.0	266	45.0	170	7½	22.0	147.4	200
	460/3/60	414	508	29.0	120	20.0	77	7½	11.0	67.3	70
	575/3/60	518	632	23.0	96	17.0	62	7½	8.7	54.7	70
50BK034	208/230/3/60	187	254	64.0	266	64.0	266	7½	22.0	166.0	200
	460/3/60	414	508	29.0	120	29.0	120	7½	11.0	76.3	100
	575/3/60	518	632	23.0	96	23.0	96	7½	8.7	60.5	80
50BK044	208/230/3/60	187	254	77.2	345	77.2	345	15	46.2	221.9	250
	460/3/60	414	508	35.8	173	35.8	173	15	21.0	103.6	125
	575/3/60	518	632	30.0	120	30.0	120	15	15.4	84.9	110
50BK054	208/230/3/60	187	254	101.5	446	77.2	345	20	59.4	265.5	350
	460/3/60	414	508	48.6	223	37.9	173	20	27.0	127.7	175
	575/3/60	518	632	38.6	164	30.0	120	20	20.0	100.3	125
50BK064	208/230-3-60	187	254	120.0	506	120.0	506	25	74.8	346.8	450
	460/3/60	414	508	56.5	253	56.5	253	25	34.0	163.2	200
	575/3/60	518	632	42.9	176	42.9	176	25	25.6	124.2	150

FLA — Full Load Amps
Hp — Nominal Horsepower
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection Device (amps)
RLA — Rated Load Amps

*Minimum circuit amps (MCA) for wire sizing complies with NEC Section 430-24

†In compliance with NEC requirements for multimotor and combination load equipment (Ref NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse only

NOTES:

1 Compressor circuit breakers are current sensitive and temperature compensated to ensure compressor cutoff if current draw becomes excessive. Breakers must be manually reset

- 2 Discharge gas thermal protection or internal protection with automatic reset de-energizes the control circuit if extreme compressor motor temperature should occur from excessive gas temperature or motor overloading
- 3 Low- and high-pressure switches automatically shut off compressor(s) if refrigerant pressure exceeds switch settings. This action protects against loss of charge
- 4 Indoor fan motor circuit breaker protects against motor overload. Breaker requires manual reset
- 5 The 50BJ,BK units are ETL listed at 208/230 and 460 v and C S A certified at 575 v
- 6 Phase imbalance shall not exceed 2%
- 7 Wire sizing amps are a sum of 125% of the FLA for largest motor plus 100% of FLA for all other motors in the unit
- 8 Maximum instantaneous current flow during starting is the sum of the LRA for last compressor to start plus the FLA for all other compressors in the unit

→ Control Sequence

ALL UNITS

The indoor fan circuit breaker (IFCB) must be closed for the control circuit to be energized. When breaker is closed, the SYSTEM light will be energized.

The 044-064 units are equipped with a switch labeled STANDBY. When switch is closed, the indoor fan contactor (IFC) is energized and the indoor fan will start and run continuously. A light labeled FAN will also be energized. To use accessory timer control, switch must be put in standby position.

All units are equipped with the improved Honeywell W7100 discharge air controller. This controller is equipped with 3 control knobs: set point, reset and control band. Purpose of controller is to regulate the leaving air temperature to the set point. A setting below 50 F may decrease unit efficiency due to use of hot gas bypass at light loads. The reset knob is used to adjust reset control range from 5 F to 20 F. Reset feature requires field supplied components and wiring. The control band knob allows controller to be adjusted for the required number of stages. The control band should be set at 6 F for 50BJ, BK016-034, 054, 064 units and 8 F for 50BJ, BK044 units. Increasing control band setting above these recommended settings will decrease compressor cycling and increase leaving air temperature variations. Decreasing setting will NOT reduce discharge air temperature variations but will increase compressor cycling.

The controller is also factory equipped with 2 fixed resistors. One resistor is used to correct for the number of steps. This is done by placing a 1/4-watt, 5%-resistor across terminals **7** and **8** on microprocessor. A 3-stage, 300-ohm resistor is used on 016 units. A 4-stage, 400-ohm resistor is used on 044 units and a 600-ohm resistor is used on 024-034, 054 and 064 units. A second 510-ohm resistor is connected between terminals **9** and **Y** to indicate unit does not have an economizer. These units do not have a factory-supplied economizer. If a field supplied economizer is to be added, remove the 510-ohm resistor. Consult Carrier Corporation for more details.

If the discharge air deviates 1 F above or below the control band while unit is running, then a cooling capacity stage will either be added or removed according to the loading sequence table found on this page. Additional capacity stages will either be turned on or off until discharge air temperature is within control band or changing at a rate that will allow it to be within control band within 10 minutes.

The controller also has a fixed guaranteed minimum on and off time of 4 minutes to prevent compressor cycling.

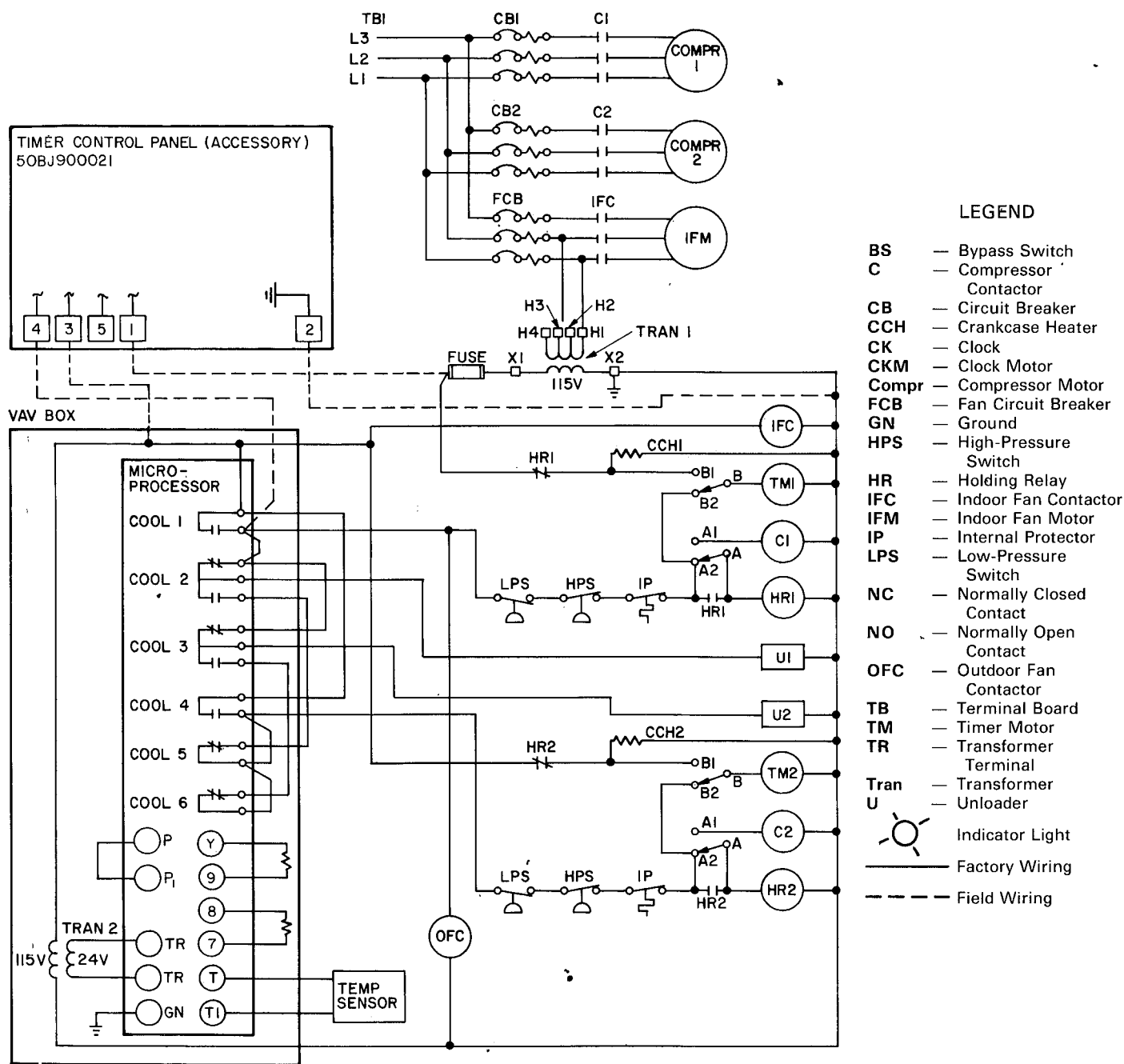
These units are additionally equipped with a Time Guard® circuit. This circuit prevents compressor no. 1 from restarting until 4 minutes, 45 seconds have elapsed from last shutdown. Compressor no. 2 will not restart until 6 minutes, 10 seconds have elapsed.

Each compressor is equipped with a high pressure switch (HPS), discharge gas thermostat (DGT) or internal protection (IP) and low pressure switch (LPS). If any of these trips, then the compressor will shut down. If after 4 minutes, 45 seconds for compressor no. 1 and 6 minutes, 10 seconds for compressor no. 2, the switch resets, the compressor will restart within 15 seconds for compressor no. 1 or 19 seconds for compressor no. 2.

The 50BK condenserless units are equipped with a liquid line solenoid (LLS). When a stage calls for compressor shutdown, the liquid line solenoid will close first. The compressor will continue to run until the low-pressure switch opens.

LOADING SEQUENCE

MODEL 50BJ, BK	STAGE					
	1	2	3	4	5	6
016	33%	67%	100%	—	—	—
024	17%	34%	50%	67%	84%	100%
028	17%	34%	50%	67%	84%	100%
034	17%	34%	50%	67%	84%	100%
044	25%	50%	75%	100%	—	—
054	19%	38%	57%	63%	84%	100%
064	17%	34%	50%	67%	84%	100%



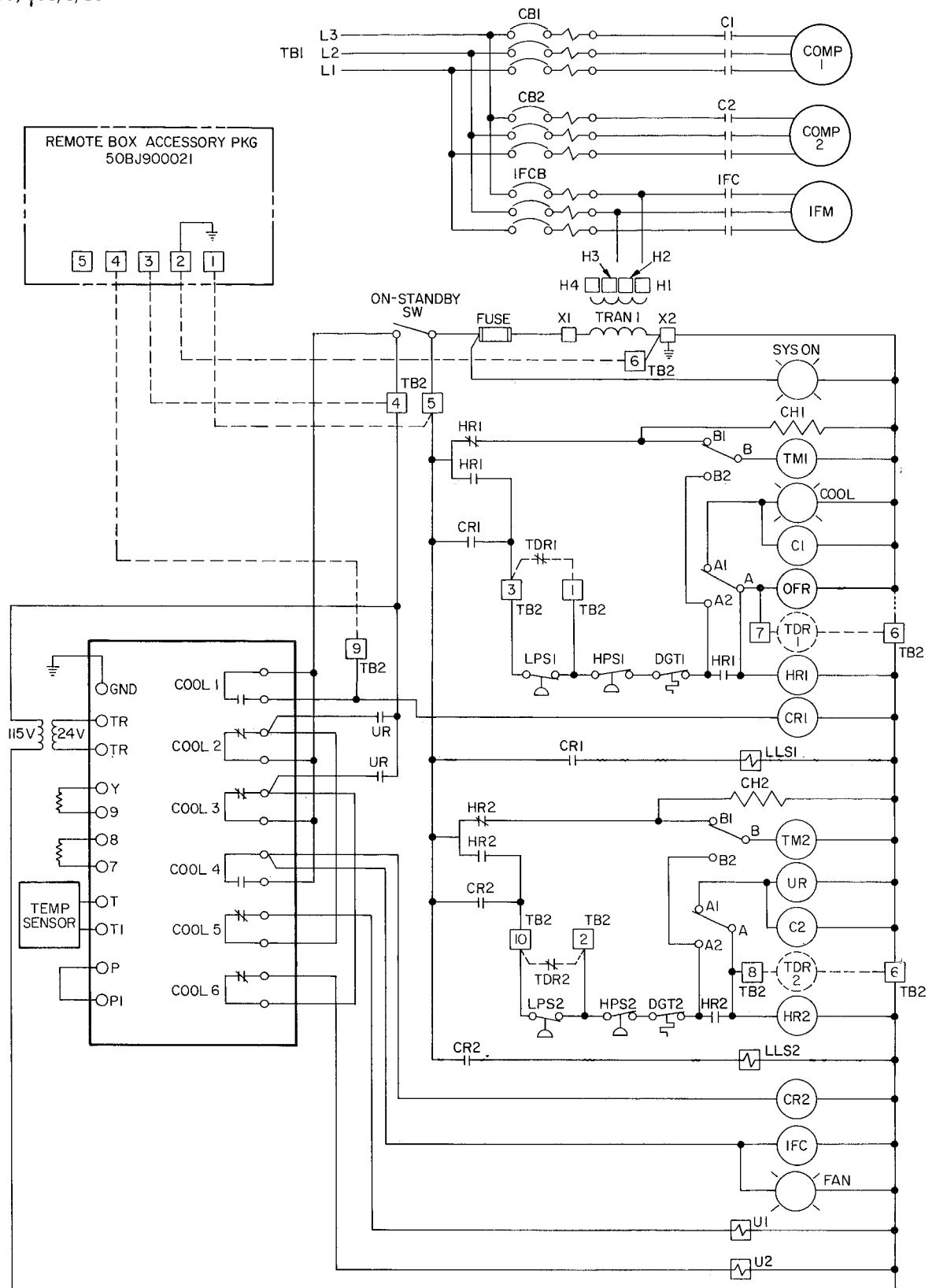
50BK UNIT ONLY

Unit Shown is 50BJ,BK024,028
and 034; 208-230,460, 575/3/60

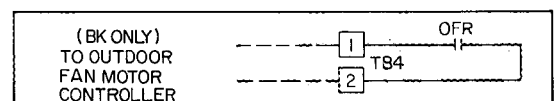
NOTES

- 1 Wiring diagram is presented for information only; for specific unit diagrams, see 50BJ,BK wiring book.
- 2 All 50BK (condenserless) units and 50BJ044-064 have crankcase heaters
- 3 At least one time-control panel is required. It may control one or several Modu-Vac units.
- 4 All units have a transformer for 115-v control circuit.
- 5 Condenser (outdoor) fan relays are shipped with units 50BK016,024,044-064
- 6 On all extended voltage (208-230) units, the control transformer is connected for 208/3/60 application. For 230/3/60 design center application, transformer must be reconnected.
- 7 Three-phase motors are protected under primary single-phasing conditions
- 8 Outdoor fan motor must not exceed 1/2 hp at 125 or 250 volts (016-034 only)

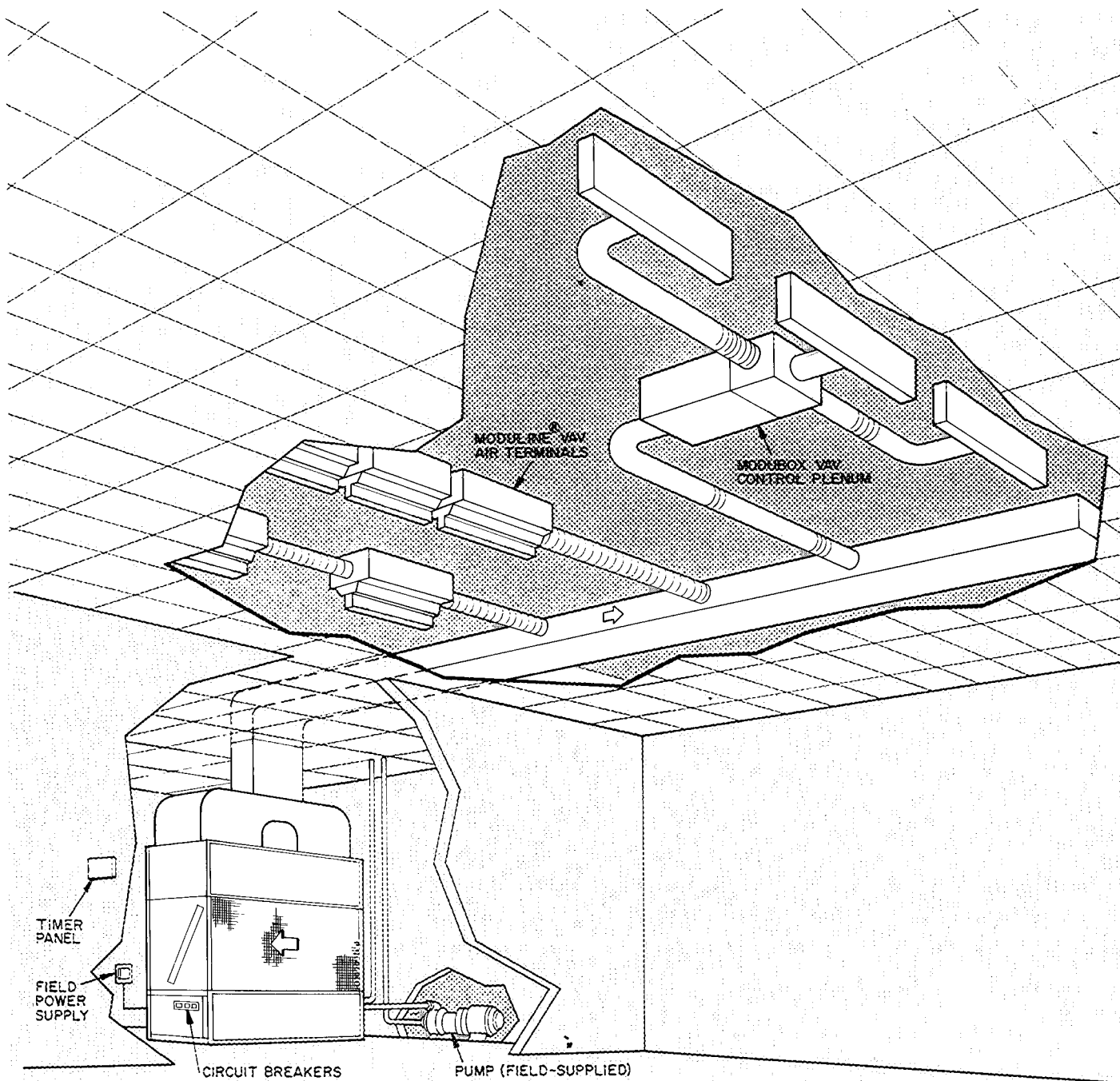
Unit Shown is 50BJ,BK044,054 and 064;
208/230, 460, 575/3/60



50BK UNITS ONLY



Maximum contact rating 125 VA at 120/250 VAC, 60-Hz
Minimum switching inrush 6 VA



NOTES:

1 Wiring and piping shown are general points-of-connection guides only and are not intended for or to include all details for specific installation.

- 2 All wiring must comply with applicable local and national codes.
- 3 All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual, Part 3, for details.
- 4 For maximum working pressure see installation instructions.

Base unit

Unit shall be single-package vertical type and shall include self-contained water-cooled condenser(s) or have provisions for connection of _____ remote, air-cooled condenser(s).

Total cooling capacity of the unit shall be _____ Btuh or greater, at conditions of _____ cfm evaporator air entering unit at _____ F wet-bulb temperature. Total sensible capacity shall be _____ Btuh or greater, with _____ F dry-bulb temperature at the above conditions.

Compressor(s) shall be serviceable hermetic type equipped with suitable vibration isolators, crankcase heaters (all 50BK and 50BJ044-064 only), filter drier(s), and suction and discharge service valves.

Electric unloaders providing _____ capacity steps shall be factory installed to provide close control of leaving air dry-bulb temperature regardless of load variations.

Compressor(s) shall be of same manufacture as unit and shall be located in a sound attenuating compartment within the cabinet.

Power input to the compressor motor(s) shall not exceed _____ kW at the conditions specified.

Evaporator coils shall be of nonferrous construction with aluminum plate fins mechanically bonded to seamless copper tubing. Coils shall be of same manufacture as unit.

Coils shall be fed by thermostatic expansion valves. Hot gas bypass to the evaporator shall be factory installed. Evaporator coil shall always have a full face active to assure proper treatment of air flowing thru unit.

Evaporator air fans shall be capable of delivering _____ cfm of air with an external static pressure of _____ in. wg or greater. Fans shall be centrifugal, forward curved, Class 1 type and shall be belt-driven by a motor of _____ nominal hp or less when operating at _____ rpm.

Condenser(s) of water-cooled condenser units (50BJ) shall be either shell and coil (016-034 units) or tube in tube (044-064 units) type, constructed in accordance with ASME safety code. Tubes shall be seamless with no interior joints. Threaded pipe (016-034 units) or sweat connections (044-064 units) shall be provided for water supply and return lines. Each 50BJ unit shall contain a full operating refrigerant charge.

Air-cooled units (50BK) shall have hot gas and liquid line shutoff valves for connection of remote, air-cooled condensers. Each 50BK unit shall be shipped with a holding charge.

Controls shall be factory wired to operate on 115 volts, 3-phase, 60 Hz power supply.

The variable volume control network shall be factory installed and wired in the unit. Control network shall contain a microprocessor which will:

- provide precise control of capacity staging;
- contain an adjustable set point for discharge air temperature;
- contain a control memory function that, by effectively retaining and recalling the previous 15 minutes of operation, will maintain a stable average discharge temperature based on those 15 minutes;
- have the ability to program a reset of discharge air temperature based on temperature readings from the conditioned space. Reset function shall be adjustable in both amount of reset and point at which reset is initiated on a pre-programmed schedule;
- contain a control band adjustment to control the maximum cycling rate of compression equipment;
- have the ability to incorporate an integrated economizer.

Safety controls shall include factory-installed circuit breakers. Cooling system shall be protected by a fusible plug (50BJ), high- and low-pressure switches, compressor overloads, and a timing device that will prevent compressor motor from being subjected to starting current more than once every 5 minutes.

Power wiring to unit shall be made to single-point terminal connections.

Cabinet shall have a zinc phosphate coating over galvanized steel and painted with a polyester baked enamel. Unit sections shall be insulated to prevent sweating and to muffle sound.

A self-contained filter frame (016-034 units) for use with standard disposable or permanent filters of _____ x _____ x _____ -in. size shall be located inside cabinet. Unit shall be factory supplied with 2-in. disposable filters.

Unit dimensions shall be _____ -in. wide, _____ -in. deep and _____ -in. high.

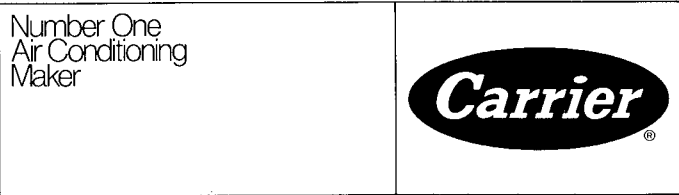
Accessories (field installed)

Timer control panel shall contain a 7-day, 10-hour spring return clock; 5-hour bypass timer and three system-status indicating lights.

Pre-heat coils shall be for steam or hot water and used on 50BJ, BK016, 024, 044, 054 and 064 units only.

Air filter sections, air filters, mixing box and discharge dampers shall be available for use on 50BJ, BK044-064 units.

Winter start package shall be available for use on units 50BK044-064.



Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations